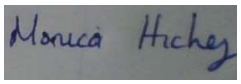
GRIFFITH COLLEGE DUBLIN

Student name:	**Monica Hickey**		
Student number:	2987065		
Faculty:	Training and Education		
Course:	MATE	Stage/Year:	2
Module:	Dissertation		
Study Mode:	Full time	Part-time	X
Lecturer/Supervisor Name:	Angela O'Keefe		
Dissertation Title:	Are Teachers Benefiting from Technology Integration to Enhance Teaching and Learning in the Further Education and Training Sector Regardless of any Challenges they Face.		
No. of pages (excluding this page):	87		
Disk included?	Yes	No	no
	(e.g. number of pieces submitted etc.)		

Academic Misconduct:

I understand that I will be subject to the penalties imposed for breaches of academic conduct as defined in the College's Academic Misconduct Procedure (QA J6).

I agree to allow Griffith College to deposit this thesis in electronic format in Griffith Online (go.griffith.ie), Griffith College's open access institutional repository on my behalf.



Signature: _____ Date: _____2nd July, 2013_____

Please note: Students MUST retain a hard / soft copy of all assignments and must SIGN the Assignment Submission Sheet provided by the lecturer / member of Faculty as proof of submission.

Are Teachers Harnessing the Benefits of Technology Integration to Enhance their Teaching and Learning In The Classroom.

A Case Study in a Further Education College.

By Monica Hickey

Dissertation submitted in partial fulfilment of the requirements for MA in Training and Education.

Faculty of Training and Education

Griffith College

July, 2020

Declaration

I hereby certify that this material, which I now submit for assessment on the programme of study leading to the award of the MA in Training and Education is my own work; based on my personal study and/or research and that I have acknowledged all material and sources used in its preparation. I also certified that I have not copied in part or whole or otherwise plagiarised the work of anyone else, including other learners.

Signed: _____

Date: _____2nd July, 2020_____

Acknowledgements

I would like to express my sincere thanks to my supervisor Dr. Angela O'Keefe for her guidance, great advice and support at all stages in completing this dissertation and most of all putting up with me throughout this process. I would also like to thank my teacher colleagues and the College for all their support while I was completing this dissertation.

A special thanks to the five teachers who agreed to be interviewed for my research. Also, a special thanks to all the great teachers working hard to ensure that students get the best educational experience.

Abstract

The rapid advancement in technology over the last two decades has put education in the spotlight and how this technology should be deployed to enhance the teaching and learning experience. As there is more focus on applying technology solutions to enhance teaching and learning, the challenge for teachers is immense on how they can best integrate technology solutions to achieve this.

The aim of this research was to explore how teachers are harnessing the benefits of technology integration in the classroom today, if any. A technology integration model framework was the technique used to identify degrees of technology adoption to find more meaningful uses of technology in teaching and learning and moving away from simply using technology for administrative purposes. A sample of five teachers who deliver business subjects in an Advanced Certificate of Business Level 6 in a Further Education College were interviewed for the purposes of this study and who all consented to their data being used in this research. The research was conducted using qualitative methodology with one-to-one interviews with each teacher.

The qualitative data suggested that teachers were integrating technology on a very small scale but were very enthusiastic to engage in this model of delivery. Some findings were very surprising and four main themes were identified which were teachers technology journey, classroom technologies integrated, benefits of technology and challenges when integrating technology.

The findings show that while there are low levels of integration and many challenges still exist, these teachers see the benefit of technology integration and a suggested roadmap was designed to guide them through the steps of the four hierarchal tasks in the SMAR framework : Substitution, Augmentation, Modification, and Redefinition.

Table of Contents

Chapter One - Introduction

Chapter Two – Literature Review

Chapter Three – Methodology

Chapter Four – Data Analysis

Chapter Five – Recommendations and Conclusions

Appendices

Chapter One: Introduction

In the last few decades, considerable investments have been made and policies introduced to facilitate the implementation of educational technology in classrooms. Research has shown that technology integration, has not resulted in systemic change in education (OECD, 2015). It has facilitated areas of creativity, resulting in some innovative cases demonstrated by excellent teachers, who practice innovative pedagogy using technology (Forkosh-Baruch, Nachmias, Mioduser, & Tubin, 2005). The teachers at the forefront of teaching and learning carry the pressure of this goal along with their normal duties of student care and delivering an excellent educational experience. Integrating technology shifts focus from the traditional lecture style where teachers are outside their comfort zone. Prensky (2012) says that the focus on knowledge in the 21st century along with the interests of 21st century students in technology, has become the students favourite way to learn and has resulted in the job of teaching going through enormous change.

Governments and Educational bodies are focused on technology as the answer to enhancing teaching and learning as seen in Programme for Government documents and Educational policy documents. However, as teachers are at centre of this phenomenon, it was imperative to hear their voices on this topic. There is much excitement and anticipation as to how this new model of delivery can transform the educational landscape as teachers are expected to integrate technology and deliver all the benefits within this "highly evolved complex institutional system" (Collins & Halverson, 2018, p.58).

The Further Education and Training (FET) Sector in Ireland

This study was carried out in a Further Education College in Dublin which is part of the FET sector in Ireland. Further education includes any study after secondary education that is not part of the higher education (not taken as part of an undergraduate or graduate degree). Further Education provides these students access to education that suits their requirements with new career possibilities.

"FET provides education and training and related supports to assist individuals to gain a range of personal and social skills and qualifications at Levels 1-6 on the NFQ or equivalent, and is aimed at jobseekers, school leavers, labour market returners, employees, those interested in new career direction, those wishing to access "second chance" education, those wishing to re-engage in learning and to prepare school leavers and others for higher education" (SOLAS, 2014, p.21).

The Government reformed, The Further Education and Training (FET) sector, as a result of a lack of strategic direction in a number of existing government agencies e.g. FAS, existing VECs through the implementation of the Further Education and Training Act, 2013. The response of Government was to streamline 33 existing VECs into 16 Education and Training Boards (ETBs) and to handover the training function of FÁS into the ETBs with the aim of bringing local and regional consistency to FET.

SOLAS is the State agency responsible for building an exceptional Further Education and Training (FET) sector to drive Ireland's future. SOLAS funds, co-ordinates and oversees Further Education and Training (FET) provision by Education and Training Boards (ETBs) on behalf of the Department of Education and Skills. In 2018, the sixteen Education and Training Boards trained over 300,000 students, delivering education and training across 33 skills clusters including business, environment, engineering, information technology and tourism (SOLAS, 2020).

FET is accessible to all. It has been a first choice for students and another route to success, often delivering another pathway to work and higher education. E.g. Community education has added enrichment for many and is important in delivering life-long learning in Ireland. Studies have shown that it is a cost effective way of confronting the results of learning failure and delivering economic and social benefits for people, employers and the state (SOLAS, 2014).

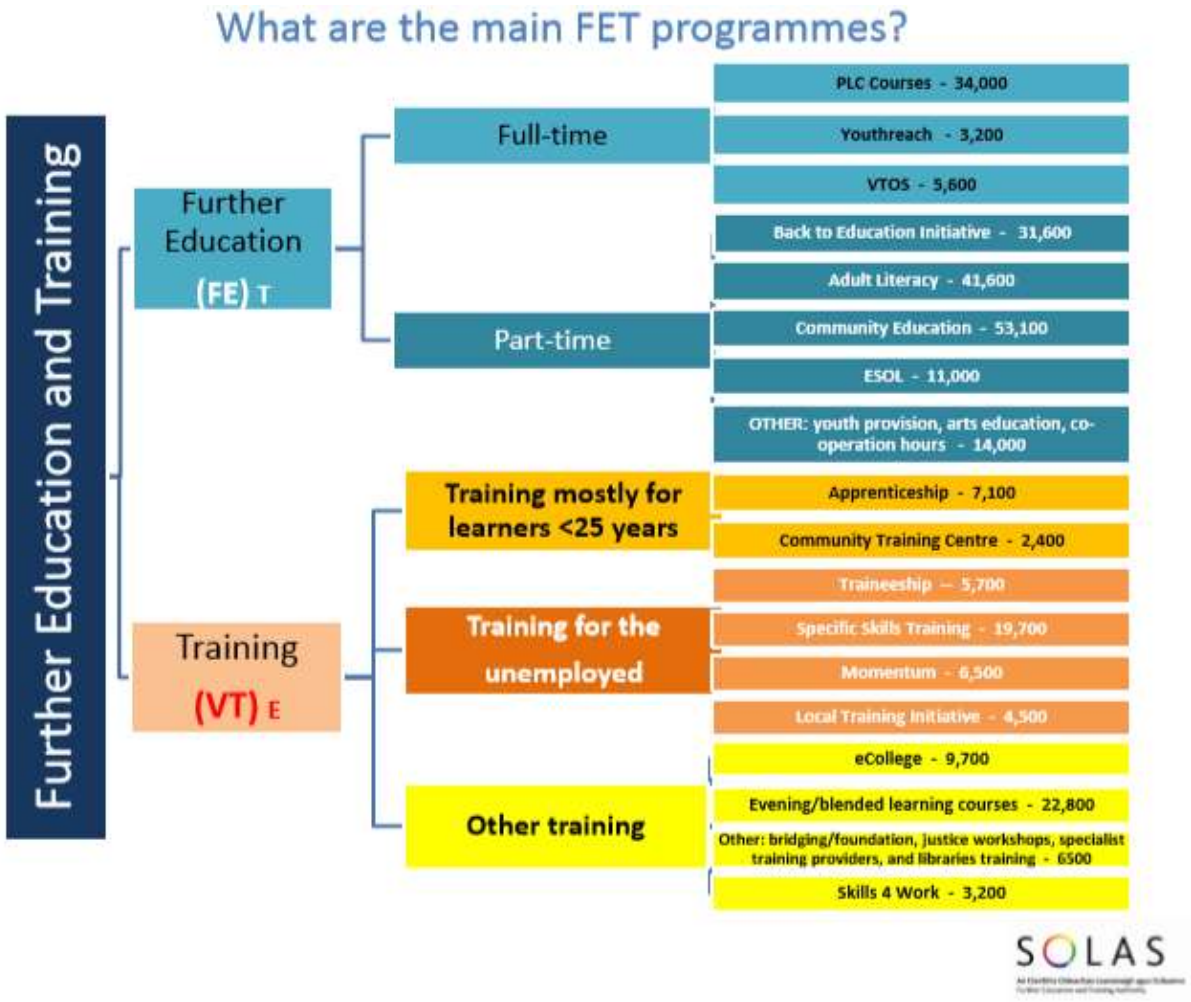
The number of FET enrolments has fallen in 2018 signalling a buoyant jobs market (DES, 2019) as outlined in the below table. Demand for FET is more buoyant in a downturn market when unemployment is higher.

INDICATOR	2014	2015	2016	2017	2018
Number of Springboard enrolments	5,102	7,767	5,102	6,564	5,025
Total persons registered on apprenticeships	6,913	8,317	10,445	12,851	15,181
of which Craft Apprenticeships	6,913	8,317	10,366	12,458	14,303
Number of Skillnet learner	46,449	48,923	50,328	49,194	56,182
of which Up-skilling the Unemployed	6,858	6,695	5,915	3,705	2,023
Enrolments in FET at NFQ levels 1-4	*n/a*	*n/a*	59,151	85,864	71,364
Enrolments in FET at NFQ levels 5	*n/a*	*n/a*	49,105	49,857	37,354
Enrolments in FET at NFQ level 6	*n/a*	*n/a*	10,663	10,801	8,358

Source: Department of Education and Skills. Education Indicators for Ireland. Produced: October 2019.

Education and Training Board (ETB)/Education and Training Board Ireland (ETBI)

The ETBs, under the authority of SOLAS, were established according to the Education and Training Boards Act 2013. ETBs are statutory education authorities who are accountable for education and training, youth work and a variety of other statutory functions. ETBs manage and run second-level schools, further education colleges, community national schools and a range of adult and further education centres delivering education and training programmes. The ETBI was also created, which represents all 16 Education and Training Boards and promote their interests. The 16 ETBs are the main providers of Further and Adult education and below is an overview of their main courses:

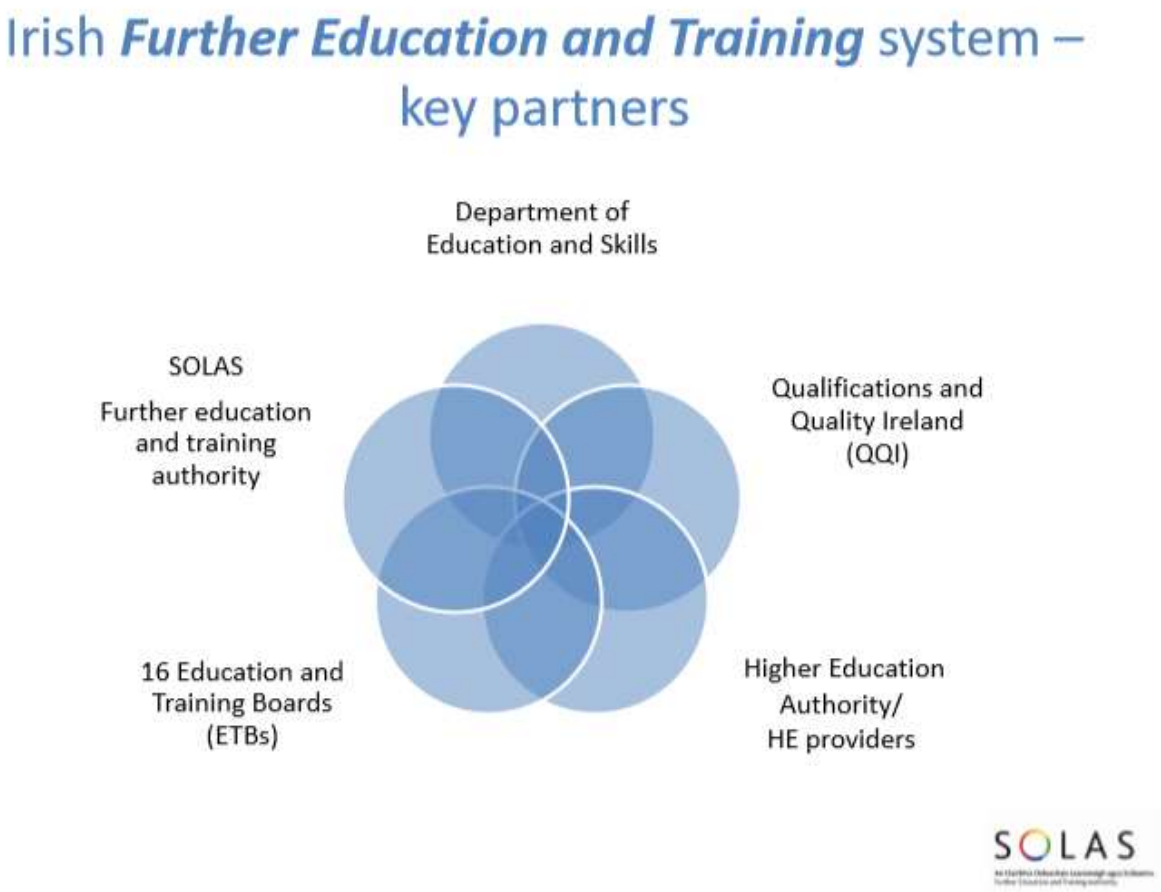


See Appendix 2 for FET Programmes, Target Groups and Objectives

ETBs operate in local communities through the direct delivery of training and education programmes delivered in training centres and colleges. ETBs want to make a real difference to the lives of the public they serve by training them for work or progression to University. The ETB who employs the teachers interviewed for this study is the City of Dublin ETB.

Further Education and Training Qualification Partners

According to SOLAS (2016), the following are the main partners for the FET sector. In terms of qualifications, QQI is the main partner complemented by the NFQ.



SOLAS (2016, p.2) The Further Education and Training Context in Ireland.

National Framework of Qualifications (NFQ)

The National Framework of Qualifications (NFQ) provide planned pathways to employment and to further learning and certify progression routes in education and training. A significant number of FET programmes are accredited by the QQI and are placed at Levels 3 to 6 on the NFQ. Universities are placed at levels 6-10. FET share levels 3, 4, 5 with second level education and level 6 with some Universities. Students completing a Level 6 qualification in FET would typically move into second year of a Level 8 degree if they achieve the necessary grades. The NFQ is a key tool that the FET uses in collaboration with the QQI, DES, HEA/HEIs. The FET plans to increase progression routes from FET to University as a way to increase social inclusion and labour market equity (SOLAS, 2014) enabling the requests of Government and Educational policies. The teachers interviewed for this study have taught at many different levels including Leaving Cert to Level 6.

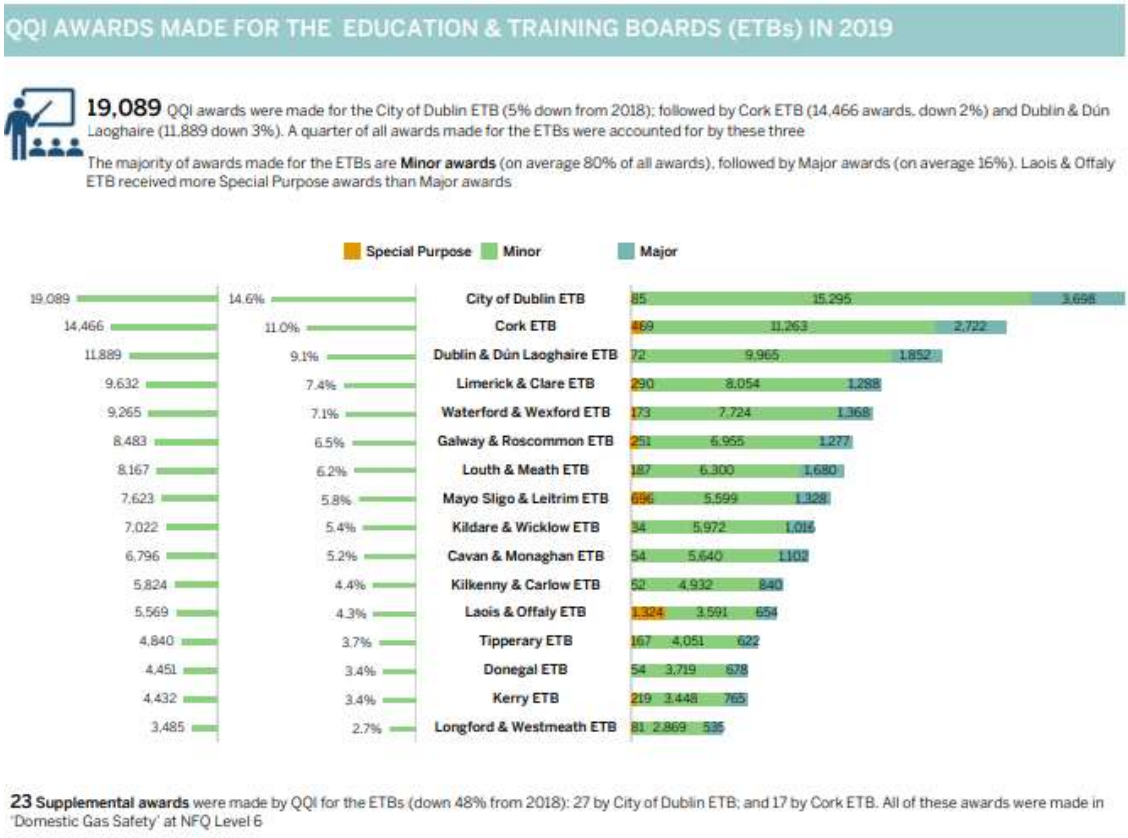
Sourced from Further Education Strategy 2014-2019 (SOLAS, 2014, p.54).

Quality and Qualifications Ireland - QQI

QQI is a State agency that ensures public confidence in the quality of education and training, promotes trust in the NFQ and ensures a continuous improvement ethos by education and training establishments. It was setup on 6th November, 2012 under the Qualifications and Quality Assurance (Education and Training) Act 2012. Its purpose comprises of maintaining the NFQ; ensuring external quality assurance for tertiary educational and training institutions and producing awards and delegating authority to produce awards.

As a body answerable for making further education and training awards, QQI is obliged to govern the applicable awards criteria. This means to govern the standards of information, expertise or competence to be learned by a student prior to issuing an award. QQI is the only body today awarding FET qualifications that are included in the NFQ.

In 2019, NFQ, Level 5 made up the largest number of awards achieved by NFQ level (49%) (QQI, 2020). QQI reported that the number of students receiving FET awards from QQI has reduced since its highest in 2016, when 166,065 students received 270,095 awards. This shows that increasing numbers of students take up places in FET at Level 5 and move into employment today. Level 5 is, therefore, the predominant level where teachers are delivering teaching and learning.



Sourced from: QQI Annual Analysis of Awards made by QQI in 2019.

Government and Educational Policy

Nearly every career warrants technology and therefore it is important for students to develop these skills as part of their education. Businesses are now competing in a "knowledge economy" and it is critical for employees to be able to source, access, analyse and use this knowledge to gain competitive advantage to add value in future jobs. It is also important for students to be able to find and operate in various social environments to build networks e.g. LinkedIN, a professional networking and career development community. There are a number of policies feeding the FET programmes and some of the key ones are discussed below.

OECD (Organisation for Economic Cooperation and Development)

The OECD is an international organisations who jointly with governments, policy makers and citizens work and design polices that deliver prosperity, equality, opportunity and well-being through evidence based solutions for economic performance, job creation and nurturing strong education.

The OECD (2015, p.186) report "Students, Computers and Learning: Making the Connection" advocates "empowering young people to become full participants in today's digital public space, equipping them with the codes and tools of their technology rich worlds and encouraging them to use online learning resources". Teachers are required to prepare all students for today and tomorrows world where digital technology is, and will be a big part of their future. Therefore, it makes sense to build digital skills into learning and teaching activities. However, this report is also realistic in its findings in that it highlights that the impact of technology on teaching and learning is disappointing and one main reason is that policymakers have "overestimated the digital skills of educators and teachers". Teachers need to acquire these digital skills, which are relatively new technological developments and are ever changing in their design and functionality.

Andreas Schleicher, OECD Director for Education and Skills "Technology is the only way to dramatically expand access to knowledge. To deliver on the promises technology holds, countries need to invest more effectively and ensure that teachers are at the forefront of designing and implementing this change." (OECD, 2015, p.4). Teachers are the experts in the teaching and learning environment and know it intimately from their daily work. It is, therefore, important that they contribute to these ongoing policies and discussions to ensure their expert contribution.

The Digital Strategy for Schools 2015-2020

The Digital Strategy for Schools sets out the vision of the Department of Education and Skills to root Information and Communications Technologies in teaching, learning and assessment in the Irish Primary and Post Primary schools in the period 2015-2020. The Departments Vision is defined as:

"Realise the potential of digital technologies to enhance teaching, learning and assessment, so that Ireland's young people become engaged thinkers, active learners, knowledge constructors and global citizens to participate fully in society and the economy" (DES, 2015, p.5).

The Programme for Government (2011-2106) committed to integrating technology more deeply into the education system. This Strategy maps out how this commitment can be realised and the ways in which technology can be used by schools to increase and enhance teaching, learning and assessment practices. This strategy recognises all technologies as well as new technologies e.g. digital technologies, digital learning products. It promises to support changes in teaching, learning and assessment in schools and links educational policy with economic and social development. It expectation is that teachers integrate digital skills in the curriculum to ensure that students acquire this skill to prepare for their future in the digitalised work environment.

Further Education and Training Strategy 2014-2019

SOLAS are tasked with ensuring the provision of 21st century high-quality FET programmes resulting in student demand and preparing students for a constant changing economy. The FET Strategy is intended "to provide a focus for the setting of investment priorities, and to provide a framework for the establishment of a strong FET sector" (SOLAS, 2014, p.3). SOLAS are tasked with delivering a great learning experience for its students including inclusive education and high quality education, flexible and open FET programmes as well as ensuring the "wellbeing" of its students (SOLAS, 2014, p.4). The ambition is to guarantee programmes delivered by the FET colleges will be linked to the FET strategy, Government priorities, students and local employer requirements. This strategy tasks teachers with not only providing excellent, up-to-date and quality education but additionally to ensure that all students wellbeing is being addressed.

National Skills Strategy 2025

The National Skills Strategy in 2016 was created, partly, to influence changes int the education and training sector, in terms of quality and ensuring it delivers knowledge and skills to all students who are required to add to society and the economy (DES, 2016). One of the main deliverables of this strategy is that the talent of our country will flourish through "the effective use of technology to support talent and skills provision, to grow enterprise and to enhance the lives of all within society" (DES, 2016, p.10). An initiative in FET is the design and rollout of ICT plans and a professional development strategy for TEL as a result of this strategy.

Over the course of this Strategy, students at all levels of education and training will be taught a mix of transversal skills and subject knowledge. Transversal skills are described as employability abilities, soft skills and transferrable skills. "They can refer to communications, resilience, creativity and problem-solving" including the EU addition of "language proficiency, mathematical competence and ICT skills" (DES, 2016, p.73).

There is a clear direction from this strategy that FET programmes must include certain transferrable skills in their courses so students acquire these skills e.g. IT to be work ready.

National Plan for Equity of Access to Higher Education 2015-2019

The National Plan for Equity of Access to Higher Education 2015-2019 was commission by the HEA in Ireland. The vision of this HEA access policy was to "ensure that the student body entering, participating in and completing higher education at all levels reflects the diversity and social mix of Ireland's population" (HEA, 2015, p.7). Its main ambitions was to guarantee that low uptake in education within certain groups would be provided with entry to education e.g. groups such as students with disabilities, lone parent, teen parent, part-time/flexible, first time mature students. All of these groups are at the heart of the FET sector student profile and access to this student cohort for higher education is through the FET sector. However, a review of this progress against targets in 2018 showed the rate of increase in the number of students entering higher education on the basis of a QQI-FET award is slow, resulting in creation of the FET-HE Transitions Sub-Group who generated a consistent strategy in moving from FET to HE (HEA, 2018). The below table shows that the transition target for further education to HE of 10% in 2019 is going to be difficult to meet. This

is a key factor for teachers on the ground who have to identify, work with, inspire and prepare students who fit the requirement to enter Higher Education in higher numbers.

Table 1: Progress Review Outcomes for the Target Groups

Target Group	NAP Base Data[13]	Progress Review outcome[14]	NAP target for 2019
Participation in higher education by people disadvantaged by socio-economic barriers (as a % of 18-20 age cohort)[15]:			
Non-manual worker group	23%	27%	30%
Semi/unskilled manual worker group	26%	36%	35%
Participation in higher education by "first-time" mature students (as a % of all new entrants)[16]:			
Full-time mature entrants to higher education	13%	9%	16%
Full-time and part-time/flexible (combined) mature entrants	19%	16%	24%
Participation in higher education by people with disabilities[17]:			
Students with disabilities as a % of all new entrants to higher education	6%	10%	8%
Number of students with physical/mobility disability	390	667	570
Number of students who are deaf/hard of hearing	210	306	280
Number of students who are blind/have a visual impairment	140	174	200
Participation in part-time/flexible higher education[18]:			
% of students studying on a part-time or flexible basis (undergraduate and postgraduate)	19%	19.8%	22%
Progression to higher education by holders of further education qualifications[19]:			
% of new entrants to higher education whose basis for admission is a further education and training qualification.	6.6%	7.3%[20]	10%
Participation in higher education by Irish Travellers[21]:			
Number of Irish Travellers in higher education (full and part-time undergraduate new entrants)	35	41	80

Source: Progress Review of the National Access Plan and Priorities to 2021 (Page 18).

The Government and Educational policy has high expectations of our educational system to deliver on a multitude of skills through technology. There is also a high expectation that teachers will delivery to these polices as they are beneficial for our students and the future of our economy and the global economy. Teachers need to be equipped with a wide variety of skills to achieve this including the skills required for the specific needs of their cohort of students.

Student and Teacher Profiles in the FET Sector

Teachers in the FET have to teach students from a variety of backgrounds and from different life experiences. They might be school leavers, employed, unemployed, single parents or carers. They might be different age groups, have qualifications or have no qualifications or they may have a disability. They may be a recovering addict, prisoners or just released from prison. They may be interested in learning and working or they may be hard to reach and need additional supports. They may be studying to upgrade their skills in work or to move to higher education and training, learning for their own development, to improve their unemployment situation, to move to a different job or to increase their ICT skills, literacy and numeracy skills. (SOLAS, 2014). Active inclusion is a major driver in the Further Education and Training Strategy 2014-2019, requiring that every citizen, particularly the most disadvantaged, contribute to society through education and employment. Teachers need a variety of skills to be able to deliver their teaching and learning effectively in this cohort of students. Inclusive policies by SOLAS ensures that this complex cohort will increase and teachers are expected to deliver high quality education while ensuring all students have a quality learning experience resulting in progress to higher education and employment. The FET sector classroom is unique in this respect. The FET teachers face a difficult task to ensure all stakeholders are satisfied.

Sourced from Further Education Strategy 2014-2019 (SOLAS, 2014, p.42).

The FET sector has a highly qualified workforce. Two-thirds of staff (67%) are qualified to either Level 8 or Level 9 based on the National Framework of Qualifications according to SOLAS (2016). Approximately seven out of ten teachers possess a teaching/training qualification (71%).). FET teach a variety of programme areas e.g. PLC courses, adult literacy courses as well as across a variety of subject/course areas and require a variety of non-teaching skills to support their student cohort. Teachers in FET also have the responsibility to help and prepare students with their advancement to University ensuring they develop the necessary skills to continue their education. The classroom sizes are generally smaller so education is more intimate. It is also important to note that 73% of teachers in the FET sector are female (SOLAS, 2016).

Teachers have the relationship with students, and each relationship is different due to the more complicated profile of the student cohort. The skills required by these teachers are vast and wide to be effective in the teaching and learning space. Technology is another skill that these teachers need to master to deliver the requirements of these policies.

Defining Technology Integration

It is important to clarify the definition of technology and technology integration for the purposes of this study. The purpose of education is to enrich life by preparing students for careers and fostering passion. Technology can be defined as "a diverse set of technological tools and resources used to communicate, and to create, disseminate, store and manage information" (Blurton, 2005, p.1). However, technology integration does not rely solely on the traditional lecture method of instruction with PowerPoint. In a technology-integrated, student-centred classroom, the teacher serves as a facilitator of instruction, mentor, and coach and technology has to be integrated into curriculum to have positive benefits. Technology will provide ways to innovatively manage and understand the curriculum both in class and outside class while facilitating individualized instruction and assessment as well as communities of learners. Through technology integration, teachers and students will access a wealth of materials, knowledge and communities to help construct new knowledge.

Yilan & Koruyan (2016) defined technology integration as successful educational technology implementation and activities to enhance teaching methodologies, achieving learning outcomes, and increasing students' motivation to learn. It also involves improving the quality of education, increasing access and improving cost-efficiency, technology integration aids students to tackle the challenges of globalization (Albirini, 2006).

This definition reinforce statements from the OECD (2015) to dramatically increase access to data and the Digital Strategy for Schools 2105-2020 to form global people in our student community. The knowledge economy and the globalisation of trade is driving these skills for the future workforce and technology skills are key to fully participate in employment. These skills are achieved through technology integration.

Context and Rationale for this Study

In the past a good teacher was considered a subject expert with a great ability to transfer their knowledge to students through talking. However, today in the complex environment of the Further Education student profile, a teachers role far exceeds this where, in addition, they have to care for their students welfare, ensure student engagement, availability outside of teaching hours, creating new innovate material and keeping up-to-date with the knowledge economy. In addition to this, the pressure that comes from policy documents, setting targets for students to progress to University as well as ensuring other targets are met such as increasing numbers who complete the various courses. The aim of this research was to explore if teachers are harnessing the benefits of technology integration in their teaching and learning space. This study takes place in the context of a Further Education classroom environment where teachers are interviewed to gain insights on this current topic.

The Research Question

This research is designed to hear the voices of the teachers and the key question underpinning this research is:

Are Teachers Harnessing the Benefits of Technology Integration to Enhance their Teaching and Learning in the Classroom.

In order to explore teacher's technology integration in more detail the following questions were addressed:

1. How are teachers integrating technology in their classrooms to enhance their teaching and learning?
2. What do teachers see as the major benefits of integrating technology in their classrooms?
3. What are the challenges facing teachers when integrating technology to enhance teaching and learning in the classroom?

Summary

The aim of this research was to explore how teachers are harnessing the benefits of integrating technology in the classroom today, if any, and what benefits and challenges they face when trying to do so. The introduction gave an overview of the context of the FET environment and the policies which influence the direction of teaching and learning while also setting the stage for how technology integration is interpreted for this study. The teacher has the relationship with the students and control of the classroom and so all the advice and policies recommended are theirs to implement or not. The following chapters will give an insight into how teachers are achieving this in real-life classrooms.

Chapter Two: Literature Review

Introduction

Fashionable words such as “Digital Economy”, “Game Based Learning”, “Knowledge Revolution”, “Computer Simulated Technology” are increasingly dominating the education landscape and their possibilities. Teachers are faced with trying to understand these terms and how they fit into their teaching and learning space. This review will look at teachers and the teaching and learning space and how they are interpreting policy and integrating technology to reap all these benefits.

Teaching and Learning

The teaching and learning environment have evolved over many generations and the current structure is well embedded. So how is this new model of teaching and learning integrated with technology characterised for teachers.

OECD (2015, p.4) argues that technology allows us to “access specialised material well beyond text books”, and “platforms for collaboration in knowledge creation” and facilitates students as “active participants in learning communities and virtual labs” which are advantages that go well beyond the classroom. Twenty-first century classrooms require well-informed, risk taking, flexible, talented, and pro-change teachers who guarantee to meet the challenges expected of them (Rushton et al., 2007).

Access to information and using it for the advantages of evaluating and enhancing knowledge and collaboration and building new knowledge are essential policy driving factors. However, integration of technology needs to support and adapt with teachers knowledge of learning to function in a transformative space. There is, now, more emphasis on Social Constructivism in this transformative space where students can build their knowledge from the wealth of knowledge on the internet and from communities of learners discussing their views, opinions and learnings. In his social development theory, Vygotsky, suggested that social interactions plays a fundamental role in the cognitive development process (Vygotsky, 1978). Interest in social constructivism has been motivated by a number of factors, many of which were actually informed by cognitive perspectives on teaching and learning (McGilly, 1996). Explaining one’s thinking to another leads to deeper cognitive processing (Scardamalia & Bereiter 1989). Students are learning within these communities through learning theories that have always guided our teaching and learning but through a different method.

Teachers operate in social environments in the classroom where knowledge is traditionally constructed through the teacher from books or information in the teacher’s head. Technology can

expand on this construction through opening up the world. Teachers do not become redundant but facilitate, guide and advice as part of the process of learning and teaching.

Collins & Halverson (2018) suggest that networks made up of people from various backgrounds, ages, specialists and non-specialists, hanging out, working together, discussing and investigating topics of interest is a valuable learning environment. These online affinity groups are increasing around topics of interest for different groups of people e.g. technology, sports, maths. Collins & Halverson (2018, p.157) suggest that people "will use information networks to transform their thinking".

We know that technological advances can facilitate this new learning environment. The mobile market, which includes smartphones, laptops, and tablet devices revolutionised past technology trends e.g. educative gaming ensuring that mobile devices are making all technology developments (old and new) viable.

Prensky (2012) highlighted that a large quantity of the worlds knowledge, particularly new knowledge is in YouTube video clips easily available from a mobile device. From his research he has identified that video it the new way "to communicate, to share ideas, opinions, emotions, humour, parody with people around the world" (Prensky, 2012, p.160). Prensky (2012) suggests that video is a great way for teachers to help one another in sharing their success stories with technology (Prensky, 2012).

However, Selwyn (2002) argues that there a big difference between what technology says it can achieve and what it has actually achieved in terms of teaching and learning. Selwyn highlights that our 20th century experiments with technology, which all ended in disappointment, should be our greatest learnings. He argues that large numbers of teachers agree that digital technologies are most effective as knowledge management tools.

The complex and dynamic nature of the teaching and learning process contributes to the difficulty of effective technology integration. For example, experts and stakeholders do not always agree on what to teach and how to teach it (Woolfe, 2010). But policy is driving technology to infiltrate the teaching and learning space, not only to access a wealth of knowledge but to ensure that students can add value in jobs. SOLAS (2014) emphasised that FET need to ensure that students are work ready or close to it and be able to use a variety of 21st Century skills while managing their careers in changing and innovative times. Technology advances are immense and the drive to integrate then is immense but are these technologies ready for classroom innovations and can teachers integrate them.

Classroom Technology Integration

The Role of Technology in the classroom is moving away from the teacher talking/lecturing to the "new pedagogy of students teaching themselves with teachers guidance (a combination of "student centred learning", "problem based learning", "case based learning"), and the teachers being the "Guide on the Side" (Prensky, 2012, p.140).

Research into the effects of computers in schools showed that financial spending on technology produced more computer usage but constructive learning advantages were difficult to identify (Bulman & Fairlie, 2016). However, research demonstrates that regular usage of technology in a variety of different circumstances results in teachers integrating technology successfully more so than teachers who rarely use technology (Ertmer, 2005). In 2020, it is reasonable to expect that most teachers have a mobile phone and are using it to access information and connect with people through social networking with programmes like WhatsApp. The mobile phones have provided ease of access to these social networks and more people are participating especially from a work perspective. This level of exposure aids the use of technology and builds confidence to experiment with other technologies.

Emerging high tech solutions are current technological solutions which are likely to transform the teaching and learning space in the short term (Johnson et al., 2011). These technological solutions facilitate a tailored, assistive and unique emphasis on learning requirements (Bates & Sangrà, 2011) and offer a student-led, self-directed format in the classroom (Johnson & Adams, 2011). Social networks like Instagram, Twitter allows prospects for teamwork, co-design, knowledge building and interaction. These creative models are being integrated in classrooms in small numbers by few teachers and are not the norm (Bozalek & Ng'ambi & Gachago, 2013). This method of technology integration fits into the social constructivist model and even though limited are likely to increase and build on the definition of 21st Century skills such as critical thinking and communicating.

Marcus-Quinn (2020) in her article "The debate about technology in education is focused on devices rather than content" outlined her experience in that even where schools are employing technology, teachers are emphasising that they have to create and design their own digital resources without any help or time during school hours to do so. However, digital teaching and learning material is more complex than many are prepared to recognise. OECD (2015) eluded to this in their statement that infiltrating ICT in teaching, learning and assessment is complicated and just having ICT in a school does not mean it's effectively applied. Marcus-Quinn (2020) emphasised that Instructional design is a separate career and we need to understand the demands in terms of time, resources and

the knowledge necessary to design high-quality digital materials for students". She argues that for some students, assistive technology will facilitate access to an education that would be impossible without the technology.

This level of technology integration could help the FET teachers reach students who miss classes because e.g. of additional social responsibilities or part time work. These students can access material, e.g. videos, recordings through technology integration and teachers can guide them to additional material to help support their understanding outside of the classroom in a personalised manner thus building 21st century skills.

While technology integration adds many benefits, it is a fast changing tool and when you have spent time mastering a version, the next version is released or a new fad replaces it. Shelton (2017) argued that teachers decide against technology integration when new versions are released and old versions become obsolete, where technology lets them down and they have to revert back to older methods and where students think that teachers old fashioned solutions do not match up to their more fashionable solutions. Teachers are experts in teaching and learning and are not experts in technology and it is unreasonable to expect them to be so. Selwyn (2002), concluded that teachers see technology, primarily, as an aid to their teaching and where the anticipated advantages are difficult to achieve. Whereas Prensky (2012) argues that teachers role is not a technology one but an intellectual one, providing students with context, quality assurance and individual help whereas it is the students role to use the technology to teach themselves assuming that the students have the technology knowledge and ability to do this. As most teachers in the FE programmes have long service and therefore come from more traditional backgrounds, it is imperative to identify if they can identify with this new teaching and learning technology environment which lets the world in.

Teachers Dispositions and Beliefs

Research has found that the personal beliefs and dispositions of teachers may relate to or predict successful technology integration.

A belief can be defined as

"A broadly defined construct, combining affect, conation, and belief intervening between stimulus and response"" (Pratkinas & Breckler & Greenwald, 2014, p.xi).

SOLAS (2016) in their "Professional Development Strategy" outlined that teachers in FET are characterised by wide-spread experience and long service. (SOLAS, 2016, p.16) outline that teachers account for c.72% of the total workforce in the FET Sector. The age profile identified for teachers is as follows:

Age Profile	Total %
Over 55	23.7%
45-54	35.7%
35-44	27.9%
Under 35	12.6%

See Appendix 1 - Age Profile

That shows that almost 60% of the workforce is over 45 years of age while 87% are over 35 years of age and only 12.6% are under 35 years of age. Prensky (2001a; 2001b) identified digital immigrants as individuals born prior to the digital age and did not grow up with technology. Prensky (2012, p.82) emphasis that as Digital Immigrants adjust to technology "they always retain, to some degree, their "accent," that is, their foot in the past". Based on this definition, 87% of teachers in the FET sector are considered as digital immigrants and educated in a different time with different priorities. Collins & Halverson (2018) say that it is hard for teachers to change when they have spent many years adapting to what the current schooling system offers. Embedded in the existing culture of teaching is the "learning by doing" which is a big change from technology integration which advocates the "assimilation of cultural knowledge" (Collins & Halverson, 2018, p.71). That is not to say that these teachers cannot adapt to teaching and learning with technology but they will need support, training, guidance and inspiration to get through this process.

There is a vast amount of research which argues that teachers are enthusiastic about implementing technology solutions (Brill & Galloway, 2007). Some teachers feel that technology has changed their function "because the locus of "knowledge" has, in the 21st century, moved to a great extent from the teacher to the Internet" (Prensky, 2012, p.16). Teachers may not relate to this student centred environment and feel that it has moved too far away from their more traditional view of teaching and learning. According to Collins & Halverson (2018), teachers are trained to share their expertise and feel guilty when they are not actively teaching.

Previous technology use helps teachers to take on the challenge to integrate technology, and teacher's opinions challenges classroom deployment. Teachers worry that students technology skills are far superior to theirs as they have grown up with technology from a very young age. Teachers need to have knowledge in technology to integrate it into the curriculum, otherwise time and energy required to integrate it, is too much along with other teaching duties.

Training helps to build confidence and experience and by developing teachers technology knowledge, it has the impact of altering their beliefs and attitudes. Training can build a natural culture that backs ICT as fundamental to learning and teaching (Ertmer & Ottenbreit-Leftwich, 2010). Enabling teachers to share their ideas and show examples of their good practices, facilitates understanding, sharing and negotiating (Prestridge & Tondeur, 2015) thus creating new beliefs of possibilities. Teachers working together and sharing in technology dialog within learning communities can help grow confidence thus resulting in more and improved technology integration amongst a group with similar interests.

These communities and technology activities mirror the technological passions and interests of our youth, who seem to engage willingly in any technology endeavour. Teachers in the FET sector face many issues every day with their cohort of students and engagement is a big issue. Capturing their interests and passions through technology in the classroom could yield many benefits.

Student Engagement in Further Education

A key focus for FET is to increase the numbers who graduate from FET programmes with full awards across all Levels 1-6 inclusive (SOLAS, 2014). This involves higher level of engagements with student to achieve this outcome. This level of engagement will require additional effort, skills, communication, encouragement and methods of teaching and learning on behalf of the teachers with this mix of student cohort to keep them engaged, interested and to get through any social issues they experience along the way.

Trowler, (2019, p.3) defines "Student engagement is concerned with the interaction between the time, effort and other relevant resources invested by both students and their institutions intended to optimise the student experience and enhance the learning outcomes and development of students and the performance, and reputation of the institution".

"If student engagement can deliver on its promises, it could hold the magic wand making all of this possible" according to Trowler (2010, p.2.). Kuh (2003) argues that how students use their time while in college is as important as their academic achievements. Students want to learn but in addition also want to be part of something that makes the learning experience more enjoyable and drives their desire to get involved every day. Creating social groups are great ways to get students involved in more social aspects and gives them another reason to come to college and connect with the college.

According to Prensky (2012) allowing the students to do what they love and know, which is sourcing knowledge, using technology and other resources and where teachers use their skills as facilitator will increase engagement in the classroom. This method of teaching would allow students to use technology as the platform that they know and love while building 21st century skills, accessing communities of learners within their classroom. This method of learning could help a large section of this FET cohort who might feel more comfortable contributing and discussing through connected communities rather in front of a class and where they might identify a way of learning and understanding from similar students in the community. This can have a positive impact on the students wellbeing. Field (2009) agrees that engagement in learning influences good health, employability, great friendships and confidence. SOLAS (2014, p.4) outlined in their strategy document for FET that "skills development and wellbeing lie at the heart of the FET Strategy". With more students in part time and full time jobs, FET will need to provide learning and social opportunities for students outside the classroom to encourage engagement when attendance is an issue. This will involve teachers and school management understanding how learning technologies

work and how they can change the connection between teachers and students (Collins & Halverson, 2018).

However, studies find that the use of laptops and smart phones by some students in a class room is a distraction not only to the student using the device, but to others also (Fried, 2008). The distraction is both physical and audible (Kay & Lauricella, 2011). The temptation to do things other than classwork is great, and some students can be tempted to look at email, surfing the web, using IM, or playing games. This temptation is an issue for teachers, who will need to find ways to manage it, if they feel the benefits of integrating technology for engagement outweigh the disadvantages.

While policy advocates the necessity for technology integration in the classroom and benefits can be reaped from this model, the classroom is not infiltrated with technology yet. What can policies do to help move their strategies to the next level.

Challenges with Technology Integration

Research over the last thirty years has identified barriers to technology integration. Examples on the list of critical barriers are availability and access to computers (Barron et al., 2003); teachers beliefs (Ertmer, 2005); teachers technology knowledge (Pierson, 2001); lack of time (Liu & Huang, 2005).

A robust IT Infrastructure is necessary and the availability of suitable IT equipment are key to the success of technology integration. Collins & Halverson (2018, p.10) highlight that technology enthusiasts argue that trying to equip students for the 21st Century with 19th Century technology is like "teaching people to fly rockets by riding bicycles". Finance is a big issues for colleges where large sums of money are required to keep technologies up-to-date, install upgrades and provide support when technologies do not work. This is a costly and something which SOLAS have proposed to deal with in their strategy for 2020-2025. Prensky (2012) argues that students should be allowed to use the device that they love, own and know how to use, their mobile phone. Prensky (2012, p.195) advises that additionally "cell phones support the casual, short burst, multitasking style of todays "Digital Natives" learners" when used as a learning device. However, could the distraction element discussed earlier be a key issue for teachers to manage particularly in large classrooms and with the younger cohort who are quite addicted to their mobile phones.

Technical difficulties are a problem and disrupt engagement for students and teachers. Lack of technical assistance and no resolution to technical problems means teachers are not able to use the computer temporarily thus discouraging their use (Jamieson-Proctor et al., 2013) and in some situations teachers just give up and return to traditional, reliable methods.

Teachers need sufficient ICT skills to implement technology and have confidence in its use. According to Winzenried, Dalgarno and Tinkler (2010) teachers who have gone through ICT courses are more effective in teaching by using technology tools as opposed to those that have no training. However, many schools use peer-tutoring systems, used by the ETBI, where they facilitate one hour workshops to educate teachers on technology integration. However, a more skilful teacher in a more professional course over a longer term, would ensure better results in preparing teachers for technology integration. A well designed training course would provide teachers with the confidence in implementing technologies while also being able to select the appropriate technologies for particular subjects and situations. "Technology in schools should never be focused solely on the tools but should be about what, if any, technology is appropriate for the subject – and how

technology can really enrich the classroom and the student learning experience" (Marcus-Quinn, 2020).

Time is one of the biggest barriers when it comes to technology integration. Hofgartner (2018) argues that if this means creating, maintaining an online course, creating modules, creating resources, managing forums and social media then it looks like a lot of extra work for a teacher who already has a very long list in a short academic year. If we can change this perception to focus on "transforming practices to be more efficient, resource creation to be more collaborative and communication to be more seamless, staff might quickly see the benefits these technologies can have toward creating more time" (Hofgartner, 2018). This endeavour requires providing teachers with continuous training and support structures.

Even though these barriers have been discussed for decades, some schools still battle these barriers today. While SOLAS recognise the need for more funding to remove some of these barriers, teachers on the ground experience them every day. There is a lot of expectations on teachers, who need a lot of skills so governments and polices will need to invest in the development of teachers to implementing strategies.

Importance of Professional Development (PD)

Teachers' professional development programmes are important to broaden their knowledge, skills, attitudes, and self-efficacy for transformative practice and are important investments from foundation to expert. Technology integration is an important skill that teachers need to acquire to deepen students' learning and support implementation of instructional objectives. Selecting the best technology tool can be challenging and teachers face many challenges to effectively integrate technology.

Despite great technology investments in schools, teacher training and development around technology integration and pedagogical implementation lag behind. (Avci & O'Dwyer & Lawson, 2019). Policy outlines the necessity for Professional Development. DES (2015, p.13) set an objective for teachers as part of the Digital Strategy for Schools 2015-2020 to "accept ownership of their own professional learning". This is also emphasised in SOLAS (2014, p.110) that FET tutors are obliged to "upgrade their skills regularly to prepare learners for current and emerging skill needs".

SOLAS produced a Professional Development Strategy 2017-2019 which highlighted the connection between professional development and the quality of education and training delivered. The report discussed Guskey (2000) who argued that research consistently reports improvements in education never happen without Professional Development. The strategy highlighted that FET teachers teach in a variety of programme areas e.g. PLC courses, adult literacy courses as well as across a variety of subject/course areas and require a varied Professional Development Strategy. SOLAS's strategic priority in FET Professional development is in TEL and ICT which teachers recognised as areas of weakness. The strategy also highlighted that teachers previously, when involved in Professional Development, chose courses that relate to their traditional skills (SOLAS, 2016). *See Appendix 3 – Teachers Level of Confidence in Particular Skills.*

Research shows that teachers' biggest challenge is when they try to implement newly learned methods into their classrooms (Fullan, 2001). Fullan, (2001, p.71) referred to this problem as the "implementation dip". This is true in teachers' professional development programs because they are planned to equip teachers with knowledge without integration skills or strategies. Moreover, current training programs are not planned to provide teachers with continuous and just-in-time support as they implement technology into their classrooms. A major criticism of current teacher professional development efforts is that many of them have emphasized improving teachers' attitudes toward technology integration and increasing their self-efficacy without a strong enough emphasis on pedagogically sound practice and technology integration. Some scholars have indicated that professional development goals must shift to emphasize understanding and utilizing

pedagogically sound technology practices (Inan & Lowther, 2010). According to Cennamo, Ross, and Ertmer (2010), to achieve technology integration that targets student learning, teachers need to identify which technologies support specific curricular goals. Doing so would require understanding the technological tools themselves, as well as the specific affordances of each tool that would enable students to learn difficult concepts more readily, resulting in greater and more meaningful student outcomes (Ertmer & Ottenbreit-Leftwich, 2010). Professional development plans should be planned and applied to enhance instruction and ensure all teachers are given the opportunity to learn effectively using technology as it is considered as key in high quality education (Ertmer, Ottenbreit & Leftwich, 2010).

Several studies have found that PD that includes peer collaboration and active, hands-on learning experiences are more effective for preparing teachers to integrate technology into their classroom practices (Barrett-Greenly, 2013). It is important that teachers remain connected with colleagues and other professionals in order to encourage feelings of motivation and to promote discussion around actual classroom applications (Avci & O'Dwyer & Lawson, 2019). SOLAS (2016, p.13) emphasised this when they viewed the important of "Peer Support" and "Peer Mentoring" and where "cultivating and maintaining networks is seen as an important feature of CPD best practice".

Teachers would benefit from developing a plan to monitor their levels of technology integration so they can plan, manage and identify where they are in this process at any stage. It would help to keep them on track and ensure progression.

SAMR Model for Technology Integration

The SAMR Model was developed by Dr. Reuben Puentedura as a framework to help teachers identify more meaningful and suitable ways of choosing and applying technology in the classroom. It shows a path to follow for teachers starting out in this process to progress through. As teachers moves along the path, computer technology becomes significant in the classroom but at the same time becomes more un-notices as it is intertwined in the natural settings of good teaching and learning.

SAMR is designed to "facilitate the acquisitions of proficiency in modern consumer technologies and software for both staff and students with the hope of promoting 21st century skills" (Cummings 2014). Through the SAMR model, integrating technology is viewed as four hierarchal different tasks: Substitution, Augmentation, Modification, and Redefinition. These tasks are grouped into two separate areas, enhancement and transformation created by Ruben Puentedura (2013) (See Figure 1.)

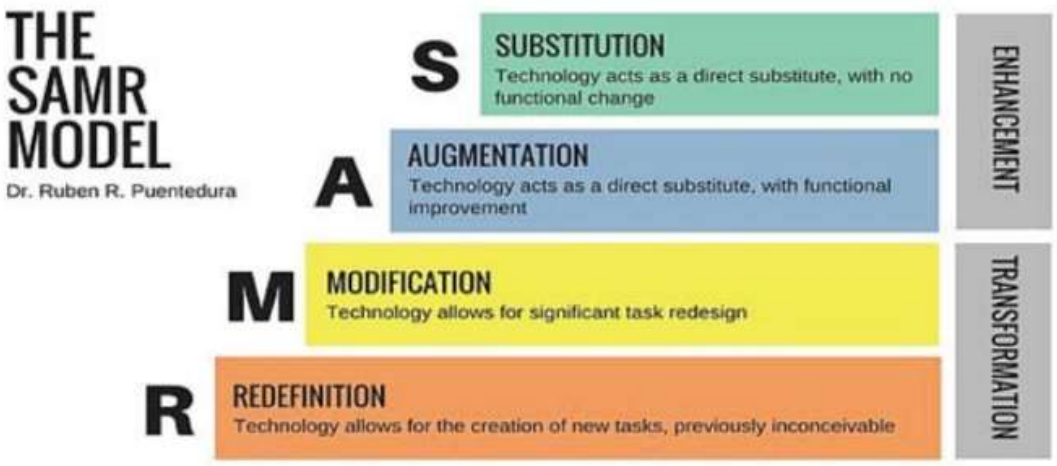


Figure 1. by Leffler, 2016. Creative Commons license CC BY-SA 4.0.

Using the SAMR model, teachers are asked to reflect on their own technology integration and implement changes in the implementation of technology into their practice to take teaching and learning to the next level. According to Puentedura, the SAMR model leads to higher learning since it urges teachers to move from lower to higher levels of teaching with technology, while always ensuring the importance of pedagogy and curriculum (Puentedura, 2014). The progression levels are:

Substitution: At this stage, technology acts as a direct tool substitute, with no functional change. This stage may include reading an e-book instead of a hard copy of the same book.

Augmentation: Puentedura explains that in this stage the task is not carried out in the exact same way, that the technology provides opportunities to be more efficient, swifter, and provides greater opportunities for student engagement. However, the overall task remains the same (Puentedura, 2014).

Modification: Technology at this stage enhances the learning activity and transforms it. An example of this stage may be students working collaboratively on an essay using google docs and posting their writing on a blog where they can give, receive, and incorporate feedback allowing them to construct knowledge and make new meaning of their research.

Redefinition: Technology at this level allows for the creation of new tasks that would be previously inconceivable without the use of technology. Technology use at this stage encourages deeper analytical thought, and dramatic improvement in student outcomes. An example is where the task may transform from a story being written to digital video storytelling that is shared with other students and can become a resource for others to learn from.

The SAMR model is powerful because it enables us to think about how learning can be more comprehensive through the use of technology and build skills through constructivism.

Conclusion

Research has shown that technology integration, has not resulted in systemic change in education. While policy makers have outlined their views of how technology needs to be infiltrated into the teaching and learning space, they have not provided the "how" to achieve this. Sharing some teachers excellent examples can encourage this practice and it is suggested to achieve this by constructing professional online teacher learning communities, in a model of networked communities of practice that facilitate sharing of experiences. While teachers show enthusiasm towards this technology based model of teaching and learning, the old barriers still exist in some colleges. Specific and focused professional development in technology integration is recommended, followed by support to ensure continued motivation and advice and encouragement within teacher led online communities of technology integration. The SAMR model is designed to help teachers identify what stage they are at in technology integration and provides a guide to get to higher levels of technology integration to ensure continued progress and success.

Chapter Three: Methodology

Research Design

According to Kumar (2018, p.208) “A research design is a plan, through which you decide for yourself and communicate to others, your decision regarding what study you propose to use, how you will collect information from your respondents, how you will select your respondents, how the information you will collect is to be analysed and how you will communicate your findings”. All aspects of this plan will be discussed in this chapter which details the plan for this research.

Qualitative Research

Qualitative research, “uses a naturalistic approach that seeks to understand phenomena in context-specific settings” (Hoepfl, 1997). Qualitative research is more suitable with the social world that teachers exist in and where statistical analysis could not quantify. This study assessed the subjective human behaviour of teachers, where information was collected and meaning sought to understand the teachers everyday social context. It explored understanding teachers motivations, opinions and reasons. This type of research includes descriptive data, and with open ended questions, showing insights into the perceptions and behaviours of the teachers. To complement this design, a research strategy must be applied and it was considered that a Case Study was the most appropriate because of its design to allow exploration of the teachers activities the phenomena “technology integration” and the teachers context “classroom” where real life activity is explored.

Qualitative Research – Case Study Strategy

Simons (2009, p.21) defined a “Case study is an in-depth exploration from multiple perspectives of the complexity and uniqueness of a particular project, policy, institution, program or system in a ‘real life’”. This study explored teachers technology integration (phenomena) in classrooms (context) with the aim of understanding and exploring “how are teachers integrating technology in their classroom to enhance their teaching and learning” while identifying benefits and challenges. The case in the context of “case study” is the unit of identify and in relation to this study is the “teachers integration of technology in their classroom”. It is important to understand also what the case will not include and is defined in terms of the SAMR Model of technology integration defines technology integration as activities performed with technology which are not possible without technology. According to YIN (2003a, p.2) "the distinctive need for case studies arises out of the

desire to understand complex social phenomena" because "the case study method allows investigators to retain the holistic and meaningful characteristics of real-life events.

Yin (2003a) categorizes case studies as explanatory, exploratory, or descriptive. The type of case study chosen for this study was Explorative as explained by Yin (2003) where questions such as "What" and "How" are asked.

Qualitative Research Methods

"Research methods are the building blocks of the scientific enterprise. They are the "how" for building systematic knowledge" (Patten & Newhart, 2017, p.3). It was decided to collect evidence for this study through interviews. According to YIN (2003a) interviews are one of the recommended sources of research methods for case studies.

Interview

While initially considering Focus groups to complete this research, it was decided after asking teachers to participate, that there was a reluctance amongst teachers, to share their technological experiences, which they felt were lacking, amongst their peers. It was a concern that a group situation would result in teachers lack of willingness to share while amongst peers. Therefore, it was decided to complete the research through one-to-one interview which would facilitate a more detailed exploration and understanding of teachers uninterrupted reflections. Rubin and Rubin (2005) described a research interview as a prolonged discussion with key qualities. Patton (1990) described three kinds of qualitative interviewing: 1) informal, conversational interviews; 2) semi-structured interviews; and 3) standardized, open-ended interviews.

It was decided that this research would be conducted through one to one, semi-structured qualitative and explorative interviews through friendly discussions.

Interview Format

A semi structured interview format was the preferred choice, with pre-determined questions with flexibility to explore other topics of interest that may arise. Gillespie & French (2016) described semi-structured interviews as a verbal exchange, where one individual tries to draw information from another individual by asking questions. They explain that even-though the semi-structured interview organises a pre-determined list of questions, the conversation evolves offering participants the chance to explore topics they think are significant. This became particularly

evident in this study where two of the teachers explained experiences of online student safety issues which they felt were important to discuss.

Interview Questions

The interview process facilitated personal insight into teachers thinking and experiences from their reflections. It follows the principles of Cognitive Anthropology which posits that culture is a cognitive system shared by a group of people (AREA, 2006). This system guides questions through the teachers natural language used by the teachers to describe their experiences. The grand tour question, is the best known of the question types used by cognitive anthropologists. The grand tour question is typically an opening question which asks the interviewee to give a broad description about a particular topic. In this study, this translated as asking teachers about their years of experience in teaching and technology use both personal and professional. It then equipped the interviewer with the language of the interviewee and identified certain significant topics within the cultural framework of the interviewee. For example, in my test run of the Interview, it became clear that teachers did not fully understand what the term integrate technology meant and this word had to be translated to teaching through technology which was understood.

The grand tour questions were then followed by minitour questions that explored each of the topics. Being new to research, I worked with a written sequence of open ended interview questions that encouraged the teachers to talk comprehensively on topics. Interview questions were designed for the purpose of comparability across interviewees. The semi-structured interview, had the advantage of asking all interviewees the same core questions with the freedom to ask follow-up questions that built on the responses received in a friendly conversation. Open ended questions were chosen to allow reflection and derive valuable qualitative data. According to Kumar (2018) open ended questions elicit in-depth evidence from interviewees provided they are confident about articulating their views and are knowledgeable in the language used e.g. “What are the main challenges you experience in the classroom when integrating technology?”. *See Appendix 5 – Table of Alignment.*

Recordings

An audio recording during these interviews facilitated a more complete record of the interviewees words. Audio recordings made it easy to transcribe, soon after the recording, when it was fresh in the researchers mind. Also, Gillespie & French (2018), argued that a recording allows a researcher to concentrate totally on the interaction as opposed to feeling stress to get the interviewees words written down precisely.

Location of Interview

The researcher decided to conduct the interviews through telephone recorded conversations while the teachers were in a relaxed environment at home. They were very happy to use a phone which was a tool they were very comfortable with.

Sample

Five teachers who deliver five out of eight core subjects in the Advanced Certificate in Business Programme at Level 8 participated in this study. The subjects taught by these teachers are Advanced Economics, Sales and Marketing Management, Human Resource Management, Communications and Business Management. All the teachers were willing participants. All of the teachers were female, ranging in age between 45-55 years. Four of these teachers have a long service between 20-25 years in this college. One teacher is completing a teaching qualification and is also in the 45-55 age group, having recently left a corporate job to teach. Three of the teachers have a Level 8 teaching qualification and two teachers have no teaching qualification, qualifying to teach in Further Education based on years of work experience. The Further Education sector was the their sector of choice when entering the teaching profession. These five teachers represent the profile of teachers currently teaching in this Further Education institution. The Case Study sought to understand how these teachers integrate technology in the classroom with a particular on benefits and challenges experienced.

All interviews were recorded and saved on a password protected laptop with a Voice Recorder App. The recorded information was transcribed and analysed. All interviews were completed over March and April 2020.

Ethics

According to Kumar (2018) ethics is defined as "the moral values of professional conduct that are considered desirable for good professional practices". The three most frequently raised questions in Western research ethical guidelines according to Silverman (2016) are:

1. Codes and Consent
2. Confidentiality
3. Trust

According to professional guidelines, the researcher is responsible for informed consent, for trust and protection and for protecting their privacy by confidentiality (Ryen, 2004). A signed consent form then becomes a guarantee that participants are informed about the research and consent to participate (Silverman, 2016).

The basic issues of ethical research in education are that the researcher should respect the people who provide the data (privacy), and to avoid doing them any harm in the process (causing disruptions or stress). Participants must be aware of any potential risks in advance, so that they can make an informed judgment to participate or not. Participation must involve written consent always being obtained, participants must be informed of their right to withdraw from the study at any time, and confidentiality is assured. Storage of research data must be secure and all data disposed must be unrecoverable. Participants should be told in advance how the data they provide will be used and of any future use and agreement must be explicitly obtained and honoured. All data collected during this research study was stored on a password protected laptop and will be held there until after the Exam Review Board in September, 2020 at which time all data and recordings relating to this study will be permanently destroyed.

Before completing my research the following steps were taken:

1. Approval from Griffith College Masters of Arts, in Training and Education, Faculty Ethics Committee by submitting the below documents:
    a. Summary of Project Proposal
    b. Information Sheet for Participants
    c. Participants Consent Form
    d. Proposed Data Research Instruments

    (See Appendix 4 for Details)

The Faculty Ethics Committee gave the approval to proceed with the research on 11th December, 2019.

All interviewees were over 18 years of age and Information Sheets were emailed to the them prior to the Interviews taking place. All questions were answered and full details of the reason for the study were explained prior to the interviews. The Information Sheet gave specific details about the reason for the study, why the researcher was completing the study, confidentiality information, voluntary participation and withdrawal information and information in relation to the recording of the interviews. The Consent Form was emailed to all participants and was signed by all participants.

Knowledge production comes with a moral responsibility towards research participants. Silverman (2016) emphasises that as qualitative researchers we must identify the social stages through which things develop to be seen as ethical or not.

Data Analysis

Qualitative researchers are inclined to use inductive analysis of data, meaning that the major themes arise out of the data (Patton, 1990). Qualitative analysis requires some creativity, as the challenge is to put the "raw data into logical, meaningful categories; to examine them in a holistic fashion; and to find a way to communicate this interpretation to others" (Hoepfl, 1997, p.55). The five teachers who participated were identified as T1, T2, T3, T4, T5 to ensure their anonymity. The transcribed interviews were saved as the identifier code above. The data analysis for this research began immediately after the interviews sessions end. Anderson (1990), gave some valuable direction for data analysis and suggested the value of looking firstly for major themes, writing them down, highlighting words and context of their experiences, trying to study the value of the reactions/emotions and writing as concisely as possible On first reading of the transcripts, twelve major themes were identified. On further analysis, these themes were categorised into 4 key themes. Boyatzis (1998) defined a theme as recurrence identified in the transcripts that show possible explanations or at least explains parts of the phenomenon. This process for encoding qualitative information involves the skill of "pattern recognition" (Boyatzis, 1998, p.7). This involved a lot of reading, identifying major themes, coding, re-reading, re-coding, doing it all over again and lots of writing on paper and making comparisons to arrive at the final four themes. The researcher is responsible for developing a real scenario to represent the interpretation and generate a story from findings that will be read by others.

Limitations of the Study

It is important for researchers to be aware of sampling error issues that can arise in qualitative research. Patton (1990) argued that an error relating to distortions caused by insufficient breadth in sampling could apply. Gill & Johnson (1991) argued that a small sample size, means the findings cannot be generalised to the wider population. Issues could come from distortions introduced by changes over time and one contact with teachers would not capture time related data. This could be relevant in this case with Covid 19 implications for teachers working remotely where teachers investigated technology solutions to communicate with students. Lack of depth in data collection could also occur in qualitative data. The interviewer has no research and interviewing experience and there could be issues with lack of depth due to lack of experience

However, It can be argued that these limitation are common to all qualitative research, with qualitative researchers debating that the quality and richness of qualitative findings offset the limitations of trying to generalise across time, sample size and context. (Hogan, Dolan & Donnelly, 2009). However, it was felt that the value of capturing data at a particular time, and in a particular context is valuable as it has the possibility to change the future now. Also, it was felt that felt that the one to one semi structured interviews which were friendly in nature elicited all the required information to make an informed decision.

Chapter Four: Data Analysis

Preliminary Analysis

The overall response from the teachers interviewed was very positive towards technology integration with all teachers experimenting some level of technology integration even if limited. T2 summed up the need for technology when she said "*I feel I want my own teaching to be relevant to the student and I want my students to be engaged so I feel that the time of coming in and putting up a presentation and giving out notes is long gone*". The teachers are seeking to provide the best teaching and learning environment for their specific cohort of students and they view technology as offering ways to achieve this and particularly to increase engagement amongst their cohort of students. The initial review of the data highlighted vast years of experience in teaching with the exception of one teacher who is new to teaching. The lack of training in educational technology was a big surprise and stood out as a huge barrier for these teachers. As T3 said "No training in technology other than going in and trying things myself". The lack of confidence in the college technology infrastructure along with support seemed to be a major challenge for these teachers along with time to learn and prepare technology resources. The preliminary analysis showed 12 themes which were analysed and categorised into 4 major themes as follows:

Category 1: Teachers Technology Journey

Category 2: Experiences of Technologies Integrated

Category 3: Technology is Essential for Teaching and Learning

Category 4: Overcoming the Challenges

Category 1: Teachers Technology Journey with Teaching and Learning

To get an informed view of teachers technology integration, it was important to understand how the teachers arrived at this point in their technology journey.

Four of the interviewees have been teaching for over 20 years and have a lot of teaching experience. T3 explained "*I have taught over 20 different subjects over the last 20 years*". Explaining that she is not an early adopter of anything and considers reading as her main method of learning while labelling herself "old school". This would be the main method of learning over 20 years ago when

technology was in its infancy stage and TEL tools were unknown. T3 explains her approach to teaching and learning as a Cognitive Constructivist approach and despite her long years of service she has received no formal training in technology.

T2 describes her history "*I suppose I am teaching over 20 years and I have taught in a range of different courses from leaving cert to QQI level 5, 6 and running a department*". She uses technology in her personal life but after recently completing a 12 week TEL programme, she has been inspired and motivated by her learnings and the TEL tools available and reflected "it *opened my mind to the different possibilities*". Prior to this training course she had not received any training in technology.

Two of the Interviewees did not complete a teaching training programme, and certified to teach based on years of relevant work experience. T1 outlines her journey into teaching as "*I did not set out to be a teacher. I kind of you know ended up by default in the ETB sect*or". Her background in Industry was Business and Media and explains she is very much in favour of technology but has never received any training from the college. However, her background in media did expose her to technology. Exposure and use of technologies can give you a very good grounding in how to approach its use and build confidence.

T5 described her technology use "*not nervous around technology*" while using technology personally. She also has been teaching for over 20 years and expressed interest in using more technology recognising that her students like it "*I think, I suppose the results show the impact on students is quite positive*". However, she stills identifies herself as a more traditional style teacher and has to "push" herself to integrate technology. She feels her communications subject is quite written intensive and she might find it difficult to find ways to integrate technology. However, she has not received any training.

T4 has just come from the software Industry into teaching. She is currently completing her Post Graduate Course in Teaching in Further Education. She was exposed to many technology platforms in her previous work and considers herself "*a fan of technology*". She also highlighted that while discussing technology tools with other teachers, she always received positive responses and encouragement and great interest. However, she also explained how the TEL module as part of her Teacher training course has prepared her for the integration of technology. She explained that she is being trained as a teacher with technology and does not know any other way. T4 had worked with another colleague to transfer some of her technology skills but she found it quite challenging both from a time point of view and difficulties changing old habits.

Having received no technology training, T1 expressed a desire for the college to do training and did not appreciate one hour workshops the college had organised for teachers and described them as "*not very consistent and it is hit and miss.*" T1 suggested that teachers should complete a formal course to ensure a "more defined learning curve".

The analysis shows that these interviewees are very experienced teachers and so have acquired a vast range of skills and strategies in teaching over the years with some coming equipped with technology skills from industry to the classroom. Evidence of positive attitudes and willingness to use technology along with lack of fear is very promising. It helps when you have some experience with technology as it helps gain confidence. However, training is a key missing link.

Category 2: Experiences of Technology Integration

Identifying teachers experiences of integrating technology in class was a really important aspect of this study. The analysis showed that all teachers were integrating technology to some degree and experimentation and trial and error with technologies were ongoing.

The main college technology tool is Moodle. However, it is mainly used as a repository for students and teachers. T2 described her use of Moodle as a shared drive "*I suppose that we have Moodle in the college so we are using Moodle to upload our PowerPoint presentations for the different modules I am teaching*". T1 said that Moodle was a great platform, and only platform she uses, to ensure that students had access to their notes. However, T5 expressed her thoughts on Moodle as "*I am kind of in two minds about Moodle*" and reflecting "*I know it is very handy for students because they can access it. I think it could be a lot more user friendly to be honest. So personally sometimes I find the shared folders just easier to use*". T4 also finds Moodle quite clunky and not user friendly. While she uses Moodle, she tends to use other tools and link to them from Moodle. The data analysis shows teachers lack of experimentation with Moodle and confirming it's widespread use as a repository for PowerPoint presentations, research notes, videos and other course notes for student access. However, with no training in Moodle, it is hard for these teachers to get past the basics of what Moodle can do but it is impressive that they are trying and have grasped some advantages.

Breakdown of TEL Tools Used by Teachers

T1	Moodle, Video Clips, Internet for research, PowerPoint
T2	Moodle, PowerPoint, Videos, Internet Research. After Training – Experimenting with EdPuzzle, Voice driven PowerPoint Presentations, Kahoot
T3	Moodle, Phones for research, Moodle Links to research, YouTube Videos, Recorded class videos for skilled subjects e.g. spreadsheet topics, Mind Mapping Software, Word Clouds, Zoom, Twitter
T4	Moodle repository, Moodle as links to other resources, Records online lectures and put on Moodle, Assessments on Moodle, Google Forms, Videos, Internet for Research, Zoom, Padlet, Phones to access all resources as well as college laptops and desktops
T5	PowerPoint, Zoom, Moodle, YouTube Videos, Internet Research, Radio Studio (Old Modules), Moodle for submissions, DVDs,

A lot of the above technologies are being used at an experimental stage rather than regularly integrated into teaching on an ongoing basis. T2 explained her process as "*Now I have not been doing this for every course but I am kind of piloting it in this module in particular, the economics module*". T3 had a very interesting experience when she tried to use Twitter in the Economics module, the students rejected it because of their perceptions of twitter as a product that old people use. But T3 also pointed out that she is using a lot more integrated technology now. She has started to create videos for students particularly for spreadsheet to explain topics which students can view from Moodle 24/7 and re-play to help their learning "*Over the last few years I started creating videos for skilled subjects, especially for something like spreadsheets especially for a student who is not attending well or who are struggling"*. The students have responded well to this and it creates more time in class but she has not used this in her economics subject and explains her technology experiences as "*I don't use a huge amount in the classroom*".

In contrast, T4 who is integrating various TEL tools reflects "*I suppose I started teaching with the technology so maybe for me it is a bit different*" . The TEL module in her teacher training course has given her the confidence and know-how and she has actively integrated technology in all her modules e.g. recorded classes, created subject content videos and completed assessments accessed through Moodle and Google docs and a range of other TEL tools and identified that this method suited and engaged her students who had dyspraxia and dyslexia.

These teachers are integrating technology without any guidance or support and are doing remarkably well given the lack of access to training or any other form of expertise. It is very reassuring that they are experimenting with technologies and are willing and ready to do so.

Category 3: Technology is Essential for Teaching and Learning

T1 wants to engage with her students in a more fun and engaging way. She views her subjects "*Marketing and HR have so much on line content out there on these 2 subject areas. If you think they are both fashionable, engaging subjects as well"* and must be accessed online to get the latest up-to-date information. All Interviewees expressed their desire for their subjects to be more interesting, relevant, current and where the days of coming into the classroom and talking through a PowerPoint presentation and notes are long gone. T3 pointed out that Economics is a subject where the students are requested to follow journalists "*With technology definitely because I suppose you would always be trying to stay current. Absolutely. And there is so much good research. I think the economic journalists in Ireland are excellent"* as it helps understand the content better.

All teachers have expressed technology as an engaging tool. T2 "*I will be putting information up on Moodle with videos and stuff to get them engaged in the topic"*. TI4 expressed *"the teacher has to have the time and skills and the knack and inclination to try to make the content engaging*". There is a constant theme throughout to keep the students interested, engaged by using different types of technology like quizzes, their phones, internet researching, videos and animation. T1 expressed "*teachers who have adapted to things like Kahoot and On-line quizzes and more technology in the classroom. They would say that their students are far more engaged and more buzzed up and enthusiastic*".

Along with this all teachers believe that technology is a valuable aid to their teaching. They see the face to face teaching as a first priority and then the technology is secondary to help understand the content, make it more interesting, fun and participate in engaging activities. T3 reflects "*It is primarily an aid. But I think there can be an element of teaching through technology. Over the last few years I started creating videos*". I5 who considers herself as having a more traditional approach "Yes, it is more an aid. A very important aid". Teachers see it as a valuable aid to increase student engagement, which is important with the cohort of students in their classes. T3 summed it up when she said "*Yes their ability to focus on any one thing has really diminished over the years. And so, I think there is an obligation on us to respond to the changing students*" while also pointing out that there are more students now who do not engage with text. She also felt that students who had difficulty understanding a topic, technology helps through video recordings and availability on Moodle "*You know if they want to watch me do a macro ten times, that is fine, that is there for them*". T4 experimented with online recorded classes complemented with an online assessment and discovered her students with dyslexia and dyspraxia "*it engaged those students more". They were able to, instead of having to attend class or take notes they could listen all the time and listen*

to it beforehand and afterwards". This integration of technology helps this cohort of students learn in a way that suits them.

The teachers believe that technology can help with student's changing needs as well as the students who like technology to be part of their learning. They like using their phones and T3 has abandoned laptops and Pcs in favour of using student's phones to complete all research in her Economics and Business Management classes "*I find phones are reliable"*. T2 "*they want to be on their phones and want to be engaged but not in the old format of just a PowerPoint*". The interviewees reflected that students like on line quizzes e.g. Edpuzzle, with the competitive element and this facilitates learning in a fun way.

The teachers highlighted that students are now working part time and some full time while in full time education. T2 explained *"A lot of them have part time jobs so I think we have to move with the times".* Technology provides these opportunities where T4 solved this issue with her students who were working by "*So really from the beginning, I have always uploaded my class resources onto Moodle and then as the year progressed, I actually did one assignment in a Level 6 Sales and Marketing which was fully online assessment*". However, she found that she had to teach them how to use some of the TEL tools. T3 also explained this issue in relation to students IT skills "*Their worlds are really, really small. So maybe they are using a technology that is quite different to what I am expecting them to use. I would not assume things at all".*

All teachers expressed that face to face teaching was a top priority for this cohort of students at some level to engage, understand, encourage and support them. T5 explained *"How important that personal engagement is. Particularly with our cohort in Further Education. Maybe more so than other cohorts. Because there can be a lot of disadvantages and that there and also the academic level would not be as high so they need to be encouraged".* Even the newly qualified teacher agrees with this "*I don't think it will replace the face to face teaching. Because from my experience and from what I have found is that it is much easier to engage with people through the virtual environment if you already met them".*

Category 4: Overcoming the Challenges

The main challenges identified can be outlined as follows with time being the biggest challenge faced by all teachers:

T3 "*I would have tried different things but no I have never really taken or had the time to research an approach*". This is the biggest challenge experienced by all teachers. Where can they get time to experiment with these technologies and prepare resources. The academic year is very short with QQI so there is no room to achieve this. T2 "*we are under time constraints with QQI Level 5 and 6*". And when trying to learn and integrate a new technology T4 explained "*managing the time around creating the digital learning resources would be one that I found difficult*". T5 sounded exhausted thinking about the time and effort involved in changing to technology *"then you are kind of going oh I have to put all these hours into these notes and my inputs to the students"* when she has it all ready to go in her traditional format. T5 gave an example of two situations when showing online video resulted in student safety being compromised with some content when she did not have the time to go through all the video content before class.

As most of these teachers have taught for many years, they have a method of teaching and learning that works so why change it and incur so much stress. T5 summed it up *"I suppose there is a certain amount of sticking to what you know as well and a little bit of resistance*". This battle still exists even-though as she says *" I don't feel nervous around technology"* and her honesty in her statement "*I suppose it is the devil you know, and the devil you don't know and you kind of pushing yourself towards the devil you don't know"* or as T1 put it "*I think most teachers came through a system that worked for them. So I think if it worked for them and they think if it worked for me what was wrong with it. It's a very traditional approach and it suited us".* T3 explains the issue with teachers and technology as "*And it is maybe not that people don't want to but maybe that they do not believe they have the time to stop and think about it".*

T1 "*The general mantra is Technology is only good when it works and for it to work you need to have the backup of all IT Resources and infrastructure and support and I think the college will struggle there".* To ensure the success of any technology integration, the technology has to work and support if there is a problem. This is very evident when T4 had to ask around to find out who would help her with support for Moodle and other technologies only to find two teachers who had received technology training and her support was through emails "*When I say I did not get any help. There are one or two colleagues who have done courses*". Also, T3 abandoned the existing hardware solutions as they were too slow and moved her research to the students phones as they always worked. T1 had a similar example of lack of trust in the infrastructure "*the IT infrastructure*

can be good at times and be weak at other times and that can be kind of deflating where you kind of think at the back of your head well if the system or network goes down I am going to have my notes beside me".

Teacher lack of Technology Training (As discussed in Category 1)

Conclusion

These teachers are integrating technology without training and are doing remarkably well. There is a high level of enthusiasm and interest to achieve it to gain advantages for both teaching and learning. The teachers have identified that they do not use a lot of technology but actually they use and are experimenting with technology a lot more than they give themselves credit for. They have identified very good reasons for integrating technology and have identified the challenges, which have not put them off. So it is important to take their interest, enthusiasm, willingness and feelings of necessity and try to advance their technology integration in an environment where they are supported. This is now the bigger challenge. However, T3 is a little doubtful and thinks we need to wait a bit longer for other more transformative technologies to enter the classroom to change the world of education "*I would imagine that this whole world of virtual reality is going to change and should change teaching. I think it should allow students into other worlds you know from the comfort of their own home*".

Chapter Five: Recommendations and Conclusions

Introduction

The key purpose of the SAMR Model is to guide teachers technology integration efforts enhancing the teaching and learning space The purpose of this study was to find out how teachers are integrating technologies in the classroom and the benefits and challenges they face. As I am new to teaching, I witness the added pressure that teachers feel to integrate technology. It is surprising that these long serving teachers have had no technology training. While we do not want teachers to be technology experts, there is a requirement for a some level of technology knowledge and in all job today. Training will provide the necessary confidence and skills. It is also necessary to back up training with support networks to ensure that, when problems occur, teachers have a means of resolving it quickly. Given the current economic environment with corona virus, it is expected that any additional funding from Governments will not be forthcoming and this college will have to find innovative ways to overcome barriers.

There are many key positives from this research. These teachers are integrating technology at low levels and are doing remarkably well given the lack of training, advice and support. There is a high level of enthusiasm and interest and the teachers experience great benefits and great challenges in their efforts. It is important to take their current positive interest, enthusiasm, willingness and feelings to try to advance their technology integration in an environment where they are supported and trained to do so even for the teachers who have had TEL training. This is now the bigger challenge. It is important to note that this college has unlimited licenses for Microsoft products and have the latest update version of Moodle.

Recommendations

Professional Development

Teachers' professional development programs are critical to sharpen their knowledge, skills, attitudes, and self-efficacy for transformative practice. These programs are one of the most important investments of time and money college leaders can make in education. Technology integration is an important skill that teachers need to acquire to deepen students' learning and support innovative instructional objectives. Selecting the best technology tool can be challenging as teachers face difficulties to effectively integrate technology into their classrooms.

The first recommendation is to recommend that all teachers over a period of time receive a formal learning and technology course as a necessary part of their Professional Development programme. SOLAS (2016) highlighted that teachers who completed PD courses previously, did not complete technology courses, therefore technology courses should be encouraged. This is a critical step in the process to increase the levels of technology integration. We can see from this research the inspiring and motivational effect that such a programme can have after T2 completed a formal technology course. It is surprising that this has not been completed over the past 5-10 years but we can see that the process has started and it needs to continue. This course can be formal or informal but it must hit all the criteria to ensure technology integration. The ETBI, as the support body for the sector could provide this course through one of their resources designing (with teachers) and delivering an appropriate course for this college and could be implemented through a mix of delivery options either in college premises using their technology and over Microsoft Teams, out of office hours from home. This would engage teachers in more technology integration and the college is supporting teachers efforts. The course could also include the SAMR Model so teachers could learn to plan their technology progression and identify where they are in the process. The literature has outlined the value of training (Ertmer & Ottenbreit-Leftwich, 2010) in increasing knowledge, increasing technology usage and overcoming the embedded negative beliefs and dispositions of teachers and provides a supporting culture thus leading to higher levels of technology integration. As teacher increase their knowledge and integrate technology, they will be in a position to try to increase student engagement with technology tools which was desire by all teachers in this survey with this cohort of students.

Moodle

The main college technology tool is Moodle and it is recommended that this is used by all teachers. Moodle is an open source learning management system and is used in many colleges and universities. It was developed on pedagogical principles and is used in schools, colleges and universities for all types of learning including blended learning, distance education, flipped classroom and e-learning opportunities. Moodle is specifically programmed to give teachers, administrators and learners an open, robust, secure and free cloud based platform to design and deliver personalised learning platforms. Moodle allows teachers and students access to its resource such as course materials, gain feedback, contact tutors, upload work, see grades and discussion forums. With videos, lessons, messaging services and forums all accessible 24/7, learning with Moodle is by far the best way.

It is recommended that Moodle be used as the main technological tool for the college and all teachers receive training on Moodle as part of their training programme. Moodle should be the tool that links to other TEL tools and can be used by all students from their phones, PCs, iPads. All resources can be stored on Moodle where information is automatically backed up to cloud and gives teacher and student access 24/7. Using Moodle would help to increase engagement with students, where they can access all the teachers notes and resources and therefore can engage more, particularly if they are working full time, part time or have other issues that keep them away from class. The discussion forum in Moodle would create an environment where discussions can take place between teachers and students and between students themselves. This would help increase engagement where students can ask questions, have discussions on subjects and give their opinions, particularly if they feel it is more difficult to do so in class. This collaboration is aligned with Vygotsky's Cognitive Development. Below are a list of some features of Moodle:

Sharing Learning Material	Files and links to websites can be shared with students easily
Managing access to Learning Materials	Group students into classes to give access to learning material
Update Course Content	Update and add to course content 24/7 easily and immediately
Automated Assessment	Carry out Formative and Summative Assessment
Manage Work Submissions	Learners can submit work, receive feedback and grades from teachers
Communicate with learners	Messaging system allows teachers and learners to communicate easily 24/7
Monitoring Progress and Reports	Full audit trail to see when and how regularly students are accessing resources

Example of Applying the SAMR Model for Moodle Integration

Substitution: Teachers put all their course notes and resources on Moodle and all students have access to them 24/7.

Augmentation: The students submit their assignments on Moodle. Teacher corrects and grade the assignment on Moodle and gives the student feedback and access to grade.

Modification: The Teachers creates a discussion forum on Moodle for all students and actively discuss topics of interest related to subject or subject assignment/project/research to be completed.

Redefinition: Students can have access to previous students exemplary work going back numerous years e.g. projects, videos so that students can generate ideas/format for their own assignments 24/7.

On-Line Technology Integration Teacher Groups

In order to facilitate a more supported learning environment for technology integration, it is recommended that teachers work together in online groups of interest e.g. subjects and form a networking community of learners. This builds on DES (2015) strategy requesting that teachers join in learning communities that embrace technology integration. This would facilitate a social constructivist forum where teachers can discuss, compare, advise, critique, evaluate and review their technology integration learning. This would give the teachers access to a wealth of knowledge from other teachers who could give great support and advice and gain valuable insights. It is recommended that this could be expanded out to include other teachers in other ETBs of similar interests also. This online community would support teachers with a valuable relevant knowledgebase as advised by Prestridge & Tondeur (2015), Prensky (2012) and Collins & Halverson (2018). Teachers who are actively integrating technology will be in a position to help and guide and give their advice on this forum for their own experiences and research.

Videos Store

It is recommended that this expert online group of teachers, could create videos on specific topics of integrating technology and build a repository of videos on Moodle graded according to subject for teachers to access when they want to learn how to implement a specific TEL tool. The advice of those who have done it before would significantly reduce the learning time involved and the video is an excellent way to demonstrate the learning. These videos stored on Moodle, would give teachers 24/7 access, with access during class time if needed. Working together teachers can gain access to valuable data that would save them time if experimenting this on their own. Sharing and recording this data means all teachers can learn from it, get advice and where videos allow them to replay it several times. As there is also a wealth of knowledge on YouTube, as recommended by Prensky (2012), relevant videos from YouTube could be accessed and linked to Moodle for teachers.

Technical Support Database

It is also recommended that a database is setup where teachers input details of technical problems they encountered and possible solutions they applied. This can be implemented on Moodle where teachers have 24/7 access and could solve problems quickly while in class. This would be a first line support system and would sort a lot of the smaller, less critical problems with technology which are disruptive in the class. This would have the ability for teacher to have immediate access to a support system, created by themselves, listing common problems they experience and can resolve immediately instead of waiting for an expert. These teachers have given up in the past when technology has let them down so this could and teachers can have more control over their technological environments. However, the quality of this database will depend on teachers inputting their technical issues and solutions as they happen.

Conclusions

These recommendations aim to help teachers transform their teaching and learning environments through technology, working together, toward meaningful technology integration using SAMR model. This can only happen with ample, structured, and focused professional development in technology integration where learning to develop teachers' attitudes, self-efficacy, knowledge, support and skills for transformative practice take place using technology. With the exception T4 (New Teachers), all teachers are at the Substitution stage of the SAMR Model. Implementing these recommendations will help these teachers move up through the various stages of the SAMR model building knowledge in a teacher led online community. This environment will allow them to be amongst other teachers, speaking the same language with teachers who have similar aims and objectives when integrating technology. Formal training courses will complement this community in gaining the knowledge of "how to integrate" with research led insights.

The research clarified that teachers are benefiting from technology integration at low levels and the true benefits are yet to be realised. These teachers are very enthusiastic to implement these solutions and have overcome their dispositions and beliefs to see the benefits for their mixed cohort of students. Their drive to support technology integration is their desire to ensure their subject content is relevant and up-to-date and their students are engaged which is a big issue with their cohort of students. They have the technologies to achieve this, and they see the benefits but the biggest surprise in this study is the lack of technology training barrier. We understand the benefits

of training from the literature and so it is a necessary step for these teachers in their quest to increase technology integration. We also learned from the literature that communities of learners can support these teachers through their training and technology integrations and working together these teacher can achieve their goal and transform their teaching and learning space.

Bibliography

Albirini, A. (2006). Teachers' Attitudes Toward Information and Communication Technologies: The Case of Syrian EFL Teachers. Retrieved from: https://www.researchgate.net/publication/222183247_Teachers'_attitudes_toward_information_and_communication_technologies_The_case_of_Syrian_EFL_teachers. Accessed: 21st June, 2020.

American Educational Research Association (1992). Ethical Standards of the American Educational Research Association. Educational Researcher. 21(7).

Anderson, G. (1990). Fundamentals of Educational Research. London: The Falmer Press.

Avci, Z.Y., O'Dwyer, L.M. & Lawson, J. (2019). Designing Effective Professional Development for Technology Integration in Schools. Computer and Instructional Technology Education, Faculty of Education, Eskisehir Osmangazi University, Eskisehir, Turkey. https://doi.org/10.1111/jcal.12394

Barret-Greenly, T. (2013). Investigating The Impact of Professional Development on Teacher Practices and Beliefs Regarding the Use of Mobile Educational Applications in the Classroom. Retrieved from: https://litmedmod.ca/sites/default/files/pdf/barrett-greenly-use_of_ipad-thesis.pdf. Accessed: 21st June, 2020.

Barron, A.E., Kemker, K., Harmes, C., & Kalaydjian, K. (2003). Large-Scale Research Study on Technology in K-12 schools: Technology Integration as it Relates to the National Technology Standards. Journal of Research on Technology in Education, 35, 489–507.

Bates, T. & Sangrà, A. (2011). Managing Technology in Higher Education. Strategies for Transforming Teaching and Learning.

Blurton, C. (2005). New Direction of Use in Education: Retrieved from: https://www.academia.edu/36107452/New_Directions_of_ICT-Use_in_Education. Accessed: 1st July, 2020.

Bozalek, V., Ng'ambi, D. & Gachago, D. (2013). Transforming Teaching with Emerging Technologies: Implications for Higher Education Institutions. Retrieved from: https://core.ac.uk/download/pdf/83123732.pdf. Accessed: 2nd June, 2020.

Brill, J. M. & Galloway, C. (2007). Perils and Promises: University Integration of Technology in Classroom-Based Practices. British Journal of Educational Technology. Vol. 38, No 1, pp. 95–105.

Bulman, G. & Fairlie, R. (2016). "Technology and Education" in Hanushek, E.A., S.J. Machin and L. Woessmann (eds.), Handbook of the Economics of Education (Volume 5), pp239-280. Elsevier. Doi:10.1016/B978-0-444-63459-7.00005-1.

Buteal, A. S. (2009). Proposed Program Based on Required Professional Competence for Arabic Language Teachers at Secondary Schools in Asir Region in the Light of their Training Needs.
Boyatzis, R.E. (1998). Transforming Qualitative Information. Thematic Analysis and Code Development.

Butler D., Leahy, M., Shiel, G. & Cosgrove, J. (2013). "A Consultative Paper Building Towards a Learning Society: A National Digital Strategy for Schools". Retrieved from: http://www.education.ie/en/SchoolsColleges/Information/Information-Communications-Technology-ICT-in-Schools/Digital-Strategyfor-Schools/Building-Towards-a-Learning-Society-A-National-Digital-Strategy-for-SchoolsConsultative-Paper.pdf. Accessed: 22nd June, 2020.

Cennamo, K., Ross, J. & Ertmer, P. (2010). Technology Integration for Meaningful Classroom Use: A Standards-Based Approach.

Central Statistics Office (2020). Further Education Outcomes – Graduation Years 2010-2016. Retrieved from: https://www.cso.ie/en/releasesandpublications/ep/p-feo/furthereducationoutcomes-graduationyears2010-2016/backgroundnotesandmethodology/. Date Retrieved: 20th June, 2020.

Collins, A. & Halverson, R. (2018). Rethinking Education in the Age of Technology. The Digital Revolution and Schooling in America. Second Edition.

Compeau, D. R., & Higgins, C. A. (1995). Computer Self-Efficacy: Development of a Measure and Initial Test. MIS Quarterly, 19(2), 189-211.

Cummings, C. (2014). "Teacher Created Prescriptive Interactive Content (TCPIC), SAMR, and Modernizing Remediation in Social Science Education." Journal of Social Studies Research 2014 Conference Proceedings: 37–39.

Department of Education and Skills (2015). Digital Strategy for Schools 2015-2020. Enhancing Teaching, Learning and Assessment. Retrieved from: https://www.education.ie/en/Publications/Policy-Reports/Digital-Strategy-for-Schools-2015-2020.pdf. Assessed: 21st June, 2020.

Department of Education and Skills (2016). Irelands National Skills Strategy 2025. Retrieved from: https://www.education.ie/en/Publications/Policy-Reports/pub_national_skills_strategy_2025.pdf. Accessed: 22nd June, 2020.

Department of Education and Skills (2019). Education Indicators for Ireland. Retrieved from: https://www.education.ie/en/Publications/Statistics/Key-Statistics/education-indicators-for-ireland.pdf. Accessed: 20th June, 2020.

Education and Training Board Ireland (2020). What is an ETB? Accessed from: https://www.etbi.ie/etbs/what-is-an-etb/. Accessed: 22nd June, 2020.

Ertmer, P. A. (2005). Teacher Pedagogical Beliefs: The Final Frontier in our Quest for Technology Integration? Educational Technology Research and Development, 53(4), 25-39.

Ertmer, P.A., & Ottenbreit-Leftwich, A.T. (2010). Teacher Technology Change: How Knowledge, Confidence, Beliefs, and Culture Intersect. Journal of Research on Technology in Education, 42(3), 255-284.

Ertmer, P.A., Ottenbreit-Leftwich, A.T., Sadik, O., Sendurur, E. & Sendurur, P. (2012). Teacher Beliefs and Technology Integration Practices: A Critical Relationship. Computers & Education, 59(2), 423-435.

Field, J. (2009). Well-Being and Happiness: Inquiry into the Future for Lifelong Learning. Thematic Article 4. Leicester: National Institute of Adult Continuing Education.

Forkosh-Baruch, A., Nachmias, R., Mioduser, D., & Tubin, D. (2005). “Islands of Innovation” and “School-Wide Implementations”: Two Patterns of ICT-Based Pedagogical Innovations in Schools. Human Technology, 1(2), 202-215.

Fried, C. (2008). In-Class Laptop Use and its Effects on Student Learning. Computers & Education 50, 906-914.

Fullan, M. (2001). Leading in a Culture of Change. San Francisco CA.:Jossey-Bass.

Gill, J. & Johnson, P. (1991). Research Methods for Managers. London: Chapman Publishing Ltd.

Gillespie, G. & French, S. (2016). Key Methods in Geography.

Guskey, T. (2000). Evaluating Professional Development. Thousand Oaks, CA: Corwin Press.

Hamilton, E. R., Rosenberg, J. M., & Akcaoglu, M. (2016). The Substitution Augmentation Modification Redefinition (SAMR) model: A Critical Review and Uuggestions for its use. TechTrends, 60(5), 433-441. doi:http://dx.doi.org.sdl.idm.oclc.org/10.1007/s11528-016-0091-y.

Hammersley, M. (1985). Ethnography: What it is and What it does. Research and Evaluation Methods in Special Education: Quantitative and Qualitative Techniques in Case Study Work.

Hammersley, M. (1992). What’s Wrong with Ethnography? London: Routledge.

Hammersley, M. & Atkinson, P. (2007). Ethnography: Principles in Practice 2nd. Routledge, London 1994.

Higher Education Authority (2015). National Plan for Equity of Access to Higher Education 2015-2019. Accessed from: https://hea.ie/assets/uploads/2017/06/National-Plan-for-Equity-of-Access-to-Higher-Education-2015-2019.pdf. Accessed: 20th June, 2020.

Higher Education Authority (2018). Progress Review of the National Access Plan and Priorities to 2021. Accessed from: https://hea.ie/policy/access-policy/progress-review-of-the-national-access-plan-and-priorities-to-2021/. Accessed: 18th June, 2020.

Hilton, J.T. (2016). A Case Study of the Application of SAMR and TPACK for Reflection on Technology Integration into Two Social Studies Classrooms. Social Studies, 107(2), 68-73.

Hoepfl, M.C. (1997). Choosing Qualitative Research: A Primer for Technology Education Researchers. Journal of Technology Education Vol. 9 No. 1, Fall 1997. Retrieved from: https://vtechworks.lib.vt.edu/bitstream/handle/10919/8633/hoepfl.pdf?sequence=1. Accessed: 29th June, 2020.

Hofgartner, J. (2018). Barriers to Technology Adoption in the Further Education Sector. Blog. Published October 01, 2018. Retrieved from: https://www.instructure.com/canvas/en-gb/blog/barriers-technology-adoption-further-education-sector. Accessed: 3rd October, 2020.

Hogan, J., Dolan, P. & Donnelly, P. (2009). Approaches to Qualitative Research: Theory and its Practical Application. A Guide for Dissertation Students. Retrieved from: http://mural.maynoothuniversity.ie/2143/1/MCH-Methodology.pdf. Accessed: 13th June, 2020.

Hughes, C.C. (1992). "Ethnography": What's in a Word–Process? Product? Promise?. Qual Res 1992; 2(4): 439–450.

Hunt Report (2011). National Strategy for Higher Education to 2030. Retrieved from: https://www.education.ie/en/Publications/Policy-Reports/National-Strategy-for-Higher-Education-2030.pdf. Accessed: 3rd June, 2020.

Jamieson-Proctor, R., Albion, P., Finger, G., Cavanagh, R., Fitzgerald, R., Bond, T., & Grimbeek, P. (2013). Development of the TTF TPACK Survey Instrument. Australian Educational Computing, 27(3),26-35.

Johnson, L. & Adams, S. (2011). Technology Outlook for UK Tertiary Education 2011–2016: An NMC Horizon Report regional analysis. Austin, TX: The New Media Consortium.

Johnson, L., Smith, R., Willis, H., Levine, A. & Haywood, K. (2011). The Horizon Report. Austin, Texas. Retrieved from http://net.educause.edu/ir/library/pdf/HR2011.pdf.

Kay, R. & Lauricella, S. (2011). Unstructured vs. Structured Use of Laptops in Higher Education. Journal of Information Technology Education: Innovations in Practice, 10, 33-42.

Koehler, M., Mishra, P., Kereluik, K., Shin, T., & Graham, C. R. (2014). The Technological Pedagogical Content Knowledge Framework. In J. M. Spector, M. D. Merrill, J. Elen, & M. J. Bishop (Eds.), Handbook of research on educational communications and technology (pp. 101–111). New York: Springer.

Kuh, G.D. (2003). What We are Learning about Student Engagement. Benchmarks for Effective Educational Practice. Retrieved from: https://www.tru.ca/shared/assets/Kuh_2003_What_We_re_Learning23688.pdf. Accessed: 3rd June, 2020.

Kvale, S. (1996). InterViews. Thousand Oaks, CA: Sage.

Lefflerd (Artist). (2016). Explanation of the SAMR model. Retrieved from Wikiversity: https://en.wikiversity.org/w/index.php?title=Instructional_design/SAMR_Model/What_is_the_SAMR_Model%3F&oldid=1596851.

Liu, Y. & Huang, C. (2005). Concerns of Teachers about Technology Integration in the USA. *European Journal of Teacher Education, 28*(1), 35-47. Retrieved July 25, 2019 from https://www.learntechlib.org/p/98040/.

Marcus-Quinn, A. (2020). "The Debate about Technology in Education is Focused on Devices rather than Content" Irish Times – 15th Mary, 2020. Retrieved from: https://www.irishtimes.com/news/education/the-debate-about-technology-in-education-is-focused-on-devices-rather-than-content-1.4193946

McGilly, K. (1996). Classroom Lessons: Integrating Cognitive Theory and Classroom Practice.

OECD (2015). Students, Computers and Learning: Making the Connection, PISA, OECD Publishing. http://dx.doi.org/10.1787/9789264239555-en. Accessed: 24th May, 2020.

Patten, M.L. & Newhard, M. (2017). Understanding Research Methods: An Overview of the Essentials.

Patton, M.Q. (1990). Qualitative Evaluation and Research Methods (2nd ed.). Newbury Park, CA: Sage Publications, Inc.

Pierson, M.E. (2001). Technology Integration Practice as a Function of Pedagogical Expertise. Journal of Research on Computing in Education, 33(4), 413–430.

Prensky, M.R. (2001b). Digital Natives, Digital Immigrants, Part 2: Do They Really Think Differently? On the Horizon, 9(6), 1–6.

Prensky, M.R. (2012). From Digital Natives to Digital Wisdom, Hopeful Essays for 21st Century Learning.

Prestridge, S. & Tondeur, J. (2015). Exploring Elements that Support Teachers' Engagement in Online Professional Development. Education Sciences, 5(3), 199–219.

Puentedura, R. (2013). SAMR: A Contextualized Introduction. [PDF file]. Retrieved from http://www.hippasus.com/rrpweblog/archives/2013/10/25/SAMRAContextualizedIntroduction.pdf. Accessed: 21st June, 2020.

Puentedura, R. (2013). The SAMR Ladder: Questions and Transitions 2013 [PDF file]. Retrieved from http://www.hippasus.com/rrpweblog/archives/2013/10/26/SAMRLadder%5fQuestions.pdf. Accessed: 21st June, 2020.

Puentedura, R. (2014). SAMR: An Applied Introduction. [PDF file]. Retrieved from http://www.hippasus.com/rrpweblog/archives/2014/01/31/SAMRAnAppliedIntroduction.pdf. Accessed: 21st June, 2020.

Quality and Qualification Ireland (2020). Annual Analysis of Awards Made by QQI in 2019. Accessed from:https://www.qqi.ie/Downloads/FINAL%20QQI%20Summary%20Certification%20data%202019.pdf. Accessed: 22nd June, 2020.

Richard, K. and Neil T. (2011). An international Perspective on Science Curriculum Development and Implementation. In Fraser, Barry; Kenneth, Tobin; and Campbell.

Rubin, H. J. & Rubin, I. S. (2005). Qualitative Interviewing: The Art of Hearing Data (2nd ed.). Thousand Oaks, CA: Sage.

Ryen, A. (2004). "Ethical Issues" in Qualitative Research Practice.

Scardamalia, M, & Bereiter C. (1989). Intentional Learning as a Goal of Instruction. In Knowing, Learning and Instruction, ed. LB Resnick, pp. 361–92. Hillsdale, NJ: Erlbaum.

Selingo, J.J. (2013). College (Un)Bound: The Future of Higher Education and What It Means for Students, Journal of College and Character, 17:2, 144-146, DOI: 10.1080/2194587X.2016.1159230.

Selwyn, N. (2002). Telling Tales on Technology: Qualitative Studies of Technology and Education. Aldershot: Ashgate Publishing.

Shelton, C. (2017). Giving up Technology and Social Media: Why University Lecturers Stop Using Technology in Teaching, Pedagogy and Education. 26:3, 303-321, DOI:10.1080/1475939X.2016.1217269.

Silverman, D. (2016). Qualitative Research.

Simons, H. (2009). Case Study Research in Practice. London: SAGE

SOLAS (2014). Further Education and Training Strategy 2014-2019. Retrieved from: https://www.education.ie/en/Publications/Policy-Reports/Further-Education-and-Training-Strategy-2014-2019.pdf. Accessed: 24th May, 2020.

SOLAS (2016). FET Professional Development. Further Education and Training Professional Development Strategy 2017-2019. Retrieved from: https://www.solas.ie/f/70398/x/4e966c3112/solasfetpds.pdf. Accessed: 25th June, 2020.

SOLAS (2016). The Further Education and Training Context within Ireland. Retrieved from: http://www.leargas.ie/wp-content/uploads/2016/11/FET-in-context-SOLAS-Dr-Bryan-Fields.pdf. Accessed: 27th June, 2020.

SOLAS (2020). FET Strategy. Further Education and Training Strategy 2020 – 2024 Public Consultation: April – May 2019. Accessed from: http://www1.solas.ie/Pages/FETStrategy.aspx. Accessed: 16th June, 2020.

Spadley, J.P. (1979). The Ethnographic Interview.

Stake, R. & Jegatheesan, B. (2008). Access: A Zone of Comprehension, and Intrusion.

Thomas, L. (2012). Building student engagement and belonging in higher education at a time of change: Final report from the what works project? Student Retention and Success Programme. Paul Hamlyn Foundation, Higher Education Funding Council for England, The Higher Education Academy and Action on Access. Retrieved from http://www.heacademy.ac.uk/resources/detail/what-works-student-retention/What_works_summary_report.

Trowler, V. (2010). Student Engagement Literature Review. Retrieved from: http://www.heacademy.ac.uk/assets/documents/studentengagement/StudentEngagementLiteratureReview.pdf.

Vygotsky, L. S. (1978). Mind in Society. Cambridge, MA: Harvard University Press.

Winzenried, A., Dalgarno, B., & Tinkler, J. (2010). The interactive whiteboard: A transitional technology supporting diverse teaching practices. Australasian Journal of Educational Technology, 26(4), 534-552.

Woolf, B.P. (2010). A Roadmap for Education Technology. Retrieved from https://www.researchgate.net/publication/281328115_A_Roadmap_for_Education_Technology. Accessed: 12th June, 2020.

Twining, P., Raffaghelli, J., Albion, P.R., & Knezek, D. (2013). Moving Education into the Digital Age: The Contribution of Teachers' Professional Development. Journal of Computer Assisted Learning, 29, 426-437.

Yilan, S.M. & Koruyan, K. (2016). ICT-Based Assessment, Methods and Programs in Tertiary Education.

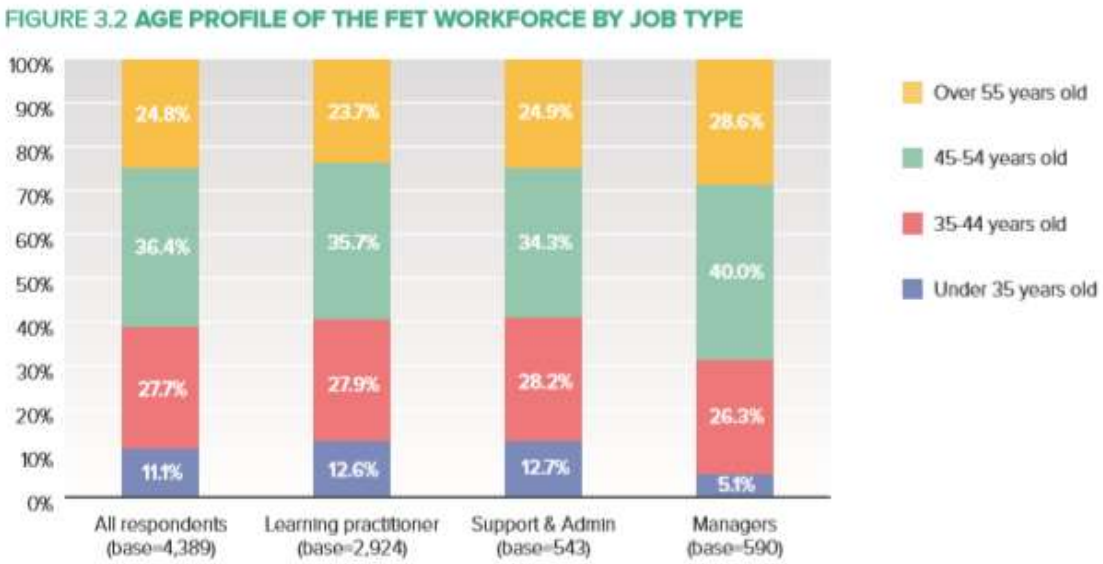
Yin, R.K. (2003). Case Study Research: Design and Methods (3rd ed.). Thousand Oaks, CA: Sage.

Younie, S. & Marilyn, L. (2013). Teaching with Technologies. Open University Press (McGraw-Hill Maidenhead UK & New York) isbn 978-033352-4618-2 248 pp £22.99 http://mcgraw-hill.co.uk/html/0335246184.html.

Zepke, N. (2014). Student engagement research in higher education: Questioning an academic orthodoxy. Teaching in Higher Education 19 (6), 697- 708. DOI: 10.1080/13562517.2014.901956.

Appendices

Appendix 1



Sourced from SOLAS (2016, p.21). Professional Development Strategy 2017-2019

Appendix 2

FET Programmes, Target Groups and Objectives

Programme	Target groups	Objective(s)
Post Leaving Certificate (PLC) Courses	Students completing secondary education and adult returners (including the unemployed)	General education, vocational training and work experience leading to stable, full-time employment. Major awards (Levels 5-6)
Vocational Training Opportunities Scheme (VTOS)	The adult unemployed (over 21), particularly the low skilled, long-term unemployed and disadvantaged	Full-time education/training leading to major awards and then employment or progression (Levels 3-5)
Youthreach	Early school leavers until age 20	Opportunity outside of main school system to acquire major awards leading to further study/training or employment (Levels 3-4)
Education Initiative (BTEI)	Individuals (16 years plus) and groups at risk of social exclusion) for whom a full-time engagement in formal learning is a particular barrier	Return part-time to FET to gain minor awards in areas of core skills competencies that aid progression or employment (Levels 3-5)
ESOL	People, including those in work and those unemployed, lacking functional competence in English language	English language competence sufficient for living and working in Ireland
Community Education	Individuals and groups at risk of social exclusion seeking community involvement and/or certified learning	Build confidence and impart core skills in informal and non-formal learning environments (Levels 1- 3)
Back to Education Initiative (BTEI)	Individuals (16 years plus) and groups at risk of social exclusion) for whom a full-time engagement in formal learning is a particular barrier	Return part-time to FET to gain minor awards in areas of core skills and key competencies that aid progression or employment (Levels 3-5)
Adult Literacy ...variants	People inside and outside the labour force with literacy/ numeracy difficulties	Achieve literacy/numeracy and progress to wider, deeper learning. When accredited, Levels 1-3

Programme	Target groups	Objective(s)
Apprenticeships	Aged 16 and over with completed Junior Certificate, and other career entrants, who find employment with a SOLAS approved employer	Advanced (National Craft) Certificate, Level 6, leading to employment in 1 of 26 designated trades
Traineeships	Unemployed primarily	Occupational skills development combining formal ETB training and workplace coaching with an employer. Certification, Level 5, dominant
Specific Skills Training	Unemployed primarily	Training and certification (Levels 4- 5 dominant, also 6) for identified job opportunities
Momentum (SOLAS managed on behalf of Department of Education and Skills	The long-term unemployed only referred by Department of Social Protection	Incentivise providers (public, private, non-profit) to bring LTU to acquire in-demand skills. Certification Levels 5-6 (3-6 for under 25s)
SOLAS managed e-College	Unemployed primarily	On-line provision plus tutor support for the computer literate available anywhere, anytime
ETB Evening Training	Unemployed primarily	Short up-skilling modules leading to a range of awards from Levels 3-6
Community Training Centres	Early school leavers aged 16-21	Personal and social skills development leading to employment or progression to mainstream learning (individualised learning plans).
Specialist Training Providers	Persons with disabilities seeking employment	Intensive, tailored training provision and supports
Local Training Initiatives	Unemployed aged 18-35 experiencing personal, social or geographic disadvantage	Personal and social skills development leading to employment or progression to mainstream learning (individualised learning plans)

SOLAS (2016) The Further Education and Training Context in Ireland. Page 14-15.

Appendix 3

FIGURE 3.5 **LEARNING PRACTITIONERS: LEVEL OF CONFIDENCE IN USING PARTICULAR SKILLS**

Sourced from SOLAS (2016, p.24). Professional Development Strategy 2017-2019

Appendix 4

Integrating Technology in Education

Information Sheet for Participants

Introduction

My name is Monica Hickey and I work as a Lecturer in Rathmines College of Further Education, Rathmines, Dublin 6. I am studying part-time for a Masters in Training and Education with Griffith College in Dublin.

Purpose

I am conducting research in the area of Technology Integration in Education from a teacher's perspective to complete my master's programme in Training and Education in Griffith College in Dublin. I am conducting research through investigating the progress of technology integration in the classroom from a teacher's perspective in Rathmines College in Dublin.

Description

You are invited to take part in this research because you are currently a teacher in Rathmines College who is keen to reap the benefits of technology integration in the classroom.

Interview with Participants

I will be interviewing 10 lecturers in Rathmines College, enquiring and understanding the level of technology integration and how this process is progressing within classrooms. I will be very interested in your opinion and experience of technology integration, all of which will be analysed for the purposes of this study.

Voluntary Participation

Your participation would be very welcome but is entirely voluntary, and you are under no obligation to take part in this study. You are free to withdraw from the study at any time up to the analysis of findings, at which stage the data will be anonymous. Up to this point you are free to withdraw your data, without giving a reason for withdrawing, and without your withdrawal having any adverse effect for you.

Confidentiality

You can be guaranteed that all information you give to me will be treated with complete confidentiality and your contributions will be kept anonymous. Data will be stored securely on the researcher's password protected laptop and a backup on an encrypted USB memory stick. With your permission the interviews will be voice recorded, and I will then type up, and anonymise what was said. Recordings will be securely destroyed following submission and grading of my work. I give my assurance that all information gathered as part of this research will be destroyed after my graduation or in 24 months, whichever is sooner.

The research ethics committee at Griffith College has granted permission for this research to be carried out. Please feel free to contact me at monicahickey8@gmail.com or 086 8179619 at any time if you have any questions regarding this study.

Thank you for reading this information leaflet.

_____

Researcher's signature

Consent Form

Introduction

My name is Monica Hickey and I work as a Lecturer in Rathmines College of Further Education, Rathmines, Dublin 6. I am studying part-time for a Masters in Training and Education with Griffith College in Dublin.

Purpose

I am conducting research in the area of Technology Integration in Education from a teacher's perspective to complete my master's programme in Training and Education in Griffith College in Dublin. I am conducting research through investigating the progress of technology integration in the classroom from a teacher's perspective in Rathmines College in Dublin.

Consent to take part in research

I…… voluntarily agree to participate in this research study.

I understand I am free to withdraw from the study at any time up to the analysis of findings, at which stage the data will be anonymous. I understand that up to this point I am free to withdraw my data, without giving a reason for withdrawing, and without my withdrawal having any adverse effect for me.

I have had the purpose and nature of the study outlined to me in writing and I have had the chance to ask questions.

I understand that participation involves interviews sessions.

I understand that I will not benefit directly from participating in this research.

I agree to my interview being voice-recorded.

I understand that all information I provide for this study will be treated confidentially.

I understand that for the purposes of this research my identity will remain anonymous. This will be done by changing my name and disguising any details.

I understand that data will be stored securely on the researcher's password protected laptop and a backup on an encrypted USB memory stick.

I understand that signed consent forms and original voice recordings will be retained until the research has been completed and the exam board confirms the results of the dissertation.

I understand that a transcript of my interview in which all identifying information has been removed will be retained until the research has been completed and the exam board confirms the results of the dissertation.

I understand that the researcher has given their assurance that all information gathered as part of this research will be destroyed after their graduation or in 24 months, whichever is sooner.

I understand that I am entitled to access the information I have provided at any time upon request.

I understand that I am free to contact any of the people involved in the research to seek further clarification and information.

Signature of research participant

---------- ----------

Signature of participant **Date**

Signature of researcher

I believe the participant is giving informed consent to participate in this study

---------- ----------

Signature of researcher

Appendix 5

Research Question	***Lit Review***	***Interview Questions***
Context: Current discourse and policy, Profiles of Parties involved.	**Current Policy Trends** Interested parties: FET Strategy, Strategy, QQI Strategy, FET Student Profile, Teacher Profile. Definition of Technology Integration Teaching and Learning Teachers Dispositions and Beliefs	**Question 1** Tell me about your background in teaching? *Prompts:* *How many years are you teaching?* *What subjects are you currently teaching?* *How long are you teaching in the Advanced Certificate in Business?* **Question 2** Can you tell me about your background experience, feelings and confidence in using technology? *Prompts:* *What technology do you use for personal use?* *What training have you received in technology?* *Would you consider yourself a confident user of technology?*

How are teachers integrating technology in their classrooms to enhance their teaching and learning?	Teaching and Learning Teachers Technology Integration in the Class Teachers Dispositions and Beliefs Importance of Professional Development SAMR Model for Technology Integration	**Question 1** What technologies do you use in the classroom and do you teach with technology or through technology? *Prompts:* *List the technologies you have used in your classroom?* *How do you use these technologies to enhance teaching and learning? Give an example.* *What is your view of technology as an aid versus teaching through technology?* *Do you think business subjects are suitable for technology integration?* **Question 2** What are the changes you have made in your teaching methods to help students learning today, if any? *Prompts:* *Do students respond well when you use technology to further enhance the learning?* *Describe how your teaching methods 10 years ago compared to today?* *What is the college vision on technology integration?*

What do teachers see as the major benefits of integrating technology in their classrooms?	Teaching and Learning Teachers Dispositions and Beliefs Engagement in Further Education	**Question 1** What is driving you to integrate technology in the classroom? *Prompts:* *What examples have you experienced where technology worked successfully?* *Do you think technology can help students understand the business subject better than without technology?* *Does technology integration suit your business subject or is it hard to find ways to integrate technology to increase understanding?* *What is your view on students today and how they learn?* *Do you think that students would benefit being connected online with one another including the teacher to facilitate teaching and learning?* **Question 2** Can you give me an example of where technology worked exceptionally well for you in class? *Prompts:* *What were the factors that made it work so well?* *Who benefited from this successful integration?* *Have you replicated this both in the same class and in other classes?* *What are your views on technology integration for this cohort of students?*
What are the challenges facing teachers when integrating technology to enhance teaching and learning in the classroom?	Teaching and Learning Challenges when Integrating Technology Professional Development and Training Engagement in Further Education	**Question 1** What do you see as the major challenges you face when integrating technology? *Prompts:* *What training have you received in technology?* *Give me an example where you tried to use a technology solution in the class and it put you off?*

		Have you heard of any pedagogies that can help with integrating technology? *What level of technologies skills do your cohort of students have?* **Question 2** Give me an example of a time when you tried to integrate technology, and it did not work and where it may have put you off? *Prompts:* *What was the problem?* *How did it affect your class?* *Where did you find a solution to the problem?* *Did you try it again?*
The Teachers Voice (The Future)	**SAMR Model for Technology Integration** Teachers Dispositions and Beliefs Professional Development Teaching and Learning	**Question 5** What do you think the future classroom will look like? *Prompts:* *Could you see a class led totally by technology?* **Question 6** What do you think new teachers are doing to change the way technology is integrated? *Prompts:* *Do you believe that new teachers are equipped with great technology skills when they teach in your college?* *What technologies have you observed that they use?* *What advice would you give to a new teacher in relation to technology integration?*